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PART A
IONOSPHERIC DATA

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U. S. DEPARTMENT OF COMMERCE
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CENTRAL RADIO PROPAGATION LABORATORY
BOULDER, COLORADO

IONOSPHERIC DATA

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SYMBOLS, TERMINOLOGY, CONVENTIONS

Beginning with data reported for January 1952, the symbols, terminology, and conventions for the determination of median values used in this report (CRPL-F series) conform as far as practicable to those adopted at the Sixth Meeting of the International Radio Consultative Committee (C.C.I.R.) in Geneva, 1951. Excerpts concerning symbols and terminology from Document No. 626-E of this Meeting are given on pages 2-7 of the report CRPL-F89, "Ionospheric Data," issued January 1952. Reprints of these pages are available upon request.

Beginning with data for January 1945, median values are published wherever possible. Where averages are reported, they are, at any hour, the average for all the days during the month for which numerical data exist.

The following conventions are used in determining the medians for hours when no measured values are given because of equipment limitations and ionospheric irregularities. Symbols used are those given in Document No. 626-E referred to above, plus an additional symbol, R: "Scaling of characteristic is influenced or prevented by absorption in the neighborhood of the critical frequency," (May 1955). Also, beginning with January 1956, additional meanings are assigned to T: A smoothed value which better fits the observations, replacing a doubtful or clearly inconsistent observed value; and to U: $foF2$ minus $foF1$ is 0.5 Mc or less (used with (M3000)F2).

a. For all ionospheric characteristics:

Values missing because of A, C, F, L, M, N, Q, R, S, or T are omitted from the median count.

b. For critical frequencies and virtual heights:

Values of $foF2$ (and foE near sunrise and sunset) missing because of E are counted as equal to or less than the lower limit of the recorder. Values of $h'F2$ (and $h'E$ near sunrise and sunset) missing for this reason are counted usually as equal to or greater than the median. Other characteristics missing because of E are omitted from the median count.

Values missing because of G are counted:

1. For $foF2$, as equal to or less than $foF1$.
2. For $h'F2$, as equal to or greater than the median.

The symbol W is included in the median count only when it replaces a height characteristic; the symbol D, only when it replaces a frequency characteristic.

Values missing for any other reason are omitted from the median count.

c. For MUF factor (M-factors):

Values missing because of G or W are counted as equal to or less than the median.

Values missing for any other reason are omitted from the median count.

d. For sporadic E (Es):

Values of fEs missing because of E or G (and B when applied to the daytime E region only) are counted as equal to or less than the median foE, or equal to or less than the lower frequency limit of the recorder.

At night B for fEs is counted on the low side when there is a numerical value of foF2; otherwise it is omitted from the median count.

Values of fEs missing for any other reason, and values of h'Es missing for any reason at all are omitted from the median count.

Beginning with data for November 1945, doubtful monthly median values for ionospheric observations at Washington, D. C., are indicated by parentheses, in accordance with the practice already in use for doubtful hourly values. The following are the conventions used to determine whether or not a median value is doubtful:

1. If only four values or less are available, the data are considered insufficient and no median value is computed.

2. For the F2 layer, if only five to nine values are available, the median is considered doubtful. The E and F1 layers are so regular in their characteristics that, as long as there are at least five values, the median is not considered doubtful.

3. For all layers, if more than half of the values used to compute the median are doubtful (either doubtful or interpolated), the median is considered doubtful.

The same conventions are used by the CRPL in computing the medians from tabulations of daily and hourly data for stations other than Washington, beginning with the tables in IRPL-F18.

The tables and graphs of ionospheric data are correct for the values reported to the CRPL, but, because of variations in practice

in the interpretation of records and scaling and manner of reporting of values, may at times give an erroneous conception of typical ionospheric characteristics at the station. Some of the errors are due to:

- a. Differences in scaling records when spread echoes are present.
- b. Omission of values when f_oF_2 is less than or equal to f_oF_1 , leading to erroneously high values of monthly averages or median values.
- c. Omission of values when critical frequencies are less than the lower frequency limit of the recorder, also leading to erroneously high values of monthly average or median values.

These effects were discussed on pages 6 and 7 of the previous F-series report IRPL-F5.

Ordinarily, a blank space in the fEs column of a table is the result of the fact that a majority of the readings for the month are below the lower limit of the recorder or less than the corresponding values of f_oE . Blank spaces at the beginning and end of columns of $h'F_1$, f_oF_1 , $h'E$, and f_oE are usually the result of diurnal variation in these characteristics. Complete absence of medians of $h'F_1$ and f_oF_1 is usually the result of seasonal effects.

The dashed-line prediction curves of the graphs of ionospheric data are obtained from the predicted zero-muf contour charts of the CRPL-D series publications. The following points are worthy of note:

- a. Predictions for individual stations used to construct the charts may be more accurate than the values read from the charts since some smoothing of the contours is necessary to allow for the longitude effect within a zone. Thus, inasmuch as the predicted contours are for the center of each zone, part of the discrepancy between the predicted and observed values as given in the F series may be caused by the fact that the station is not centrally located within the zone.
- b. The final presentation of the predictions is dependent upon the latest available ionospheric and radio propagation data, as well as upon predicted sunspot number.
- c. There is no indication on the graphs of the relative reliability of the data; it is necessary to consult the tables for such information.

PREDICTED AND OBSERVED SUNSPOT NUMBERS

The following predicted smoothed 12-month running-average Zürich sunspot numbers were used in constructing the contour charts:

Month	Predicted Sunspot Number										
	1957	1956	1955	1954	1953	1952	1951	1950	1949	1948	1947
December		150	42	11	15	33	53	86	108	114	126
November		147	35	10	16	38	52	87	112	115	124
October		135	31	10	17	43	52	90	114	116	119
September		119	30	8	18	46	54	91	115	117	121
August		105	27	8	18	49	57	96	111	123	122
July		95	22	8	20	51	60	101	108	125	116
June		89	18	9	21	52	63	103	108	129	112
May		77	16	10	22	52	68	102	108	130	109
April		68	13	10	24	52	74	101	109	133	107
March		60	14	11	27	52	78	103	111	133	105
February		53	14	12	29	51	82	103	113	133	90
January	150*	48	12	14	30	53	85	105	112	130	88

*This number is believed representative of solar activity at a maximum portion of the current sunspot cycle.

The latest available information follows concerning the corresponding observed Zürich numbers (some of which may be subject to minor change) beginning with the minimum of April 1954.

Observed Sunspot Number

Month	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1954				3	4	4	5	7	8	8	9	12
1955	14	16	19	23	29	35	40	46	55	64	72	80
1956	88											

WORLD-WIDE SOURCES OF IONOSPHERIC DATA

The ionospheric data given here in tables 1 to 60 and figures 1 to 120 were assembled by the Central Radio Propagation Laboratory for analysis and correlation, incidental to CRPL prediction of radio propagation conditions. The data are median values unless otherwise indicated. The following are the sources of the data in this issue:

Republica Argentina, Ministerio de Marina:
Decepcion I.

Commonwealth of Australia, Department of the Interior:
Macquarie I.

University of Graz:
Graz, Austria

British Department of Scientific and Industrial Research, Radio
Research Board:
Falkland Is.
Ibadan, Nigeria (University College of Ibadan)
Inverness, Scotland
Port Lockroy
Singapore, British Malaya
Slough, England

Defence Research Board, Canada:
Churchill, Canada
Ottawa, Canada
Resolute Bay, Canada
Winnipeg, Canada

French National Center for Telecommunications Studies:
Djibouti, French Somaliland
Fribourg, Germany

National Laboratory of Radio-Electricity (French Ionospheric
Bureau):
Casablanca, Morocco
Poitiers, France

Ministry of Postal Services, Radio Research Laboratories, Tokyo,
Japan:
Akita, Japan
Tokyo (Kokubunji), Japan
Wakkanai, Japan
Yamagawa, Japan

Norwegian Defence Research Establishment, Kjeller per Lillestrom,
Norway:
Oslo, Norway
Tromso, Norway

Manila Observatory:
Baguio, P. I.

Royal Board of Swedish Telegraphs, Radio Department, Stockholm,
Sweden:
Lulea, Sweden

United States Army Signal Corps:

Ft. Monmouth, New Jersey

Okinawa I.

White Sands, New Mexico

National Bureau of Standards (Central Radio Propagation Laboratory):

Maui, Hawaii

Narsarssuak, Greenland

Panama Canal Zone

Point Barrow, Alaska

Puerto Rico, W. I.

San Francisco, California (Stanford University)

Talara, Peru (Instituto Geofisico de Huancayo)

Washington, D. C.

HOURLY IONOSPHERIC DATA AT WASHINGTON, D. C.

The data given in tables 61 through 71 follow the scaling practices given in the report IRPL-C61, "Report of International Radio Propagation Conference," pages 36 to 39, and the median values are determined by the conventions given above under "Symbols, Terminology, Conventions." Beginning with September 1949, the data are taken at Ft. Belvoir, Virginia.

The interpretation of a cell is as follows: U F
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The U is a weight meaning doubtful. Other weights are I, interpolated, D, greater than, and E, less than. Absence of a letter in the upper left position means full weight is given to the observation.

Symbols such as F above are given in the upper right position.

There should be no difficulty in the placing of the decimal point. For the time being, a final zero will be found in each value of foF1 and foE. Thus at a later date it will be possible to register more closely scaled values of these characteristics, whenever such are reported.

ERRATA

1. IRPL-F20, table 34: Year should be 1946 instead of 1945.
2. From approximately May 30, 1954 to September 16, 1955, the height of all layers at Maui, Hawaii, was reported high by approximately 12½%.

TABLES OF IONOSPHERIC DATA

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Table 1

Washington, D. C. (38.7°N, 77.1°W)								July 1956
Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	275	6.0					3.8	2.80
01	270	5.8					3.5	2.70
02	270	5.3					3.1	2.80
03	270	4.8					3.0	2.80
04	290	4.2					3.7	2.80
05	290	4.3					3.0	2.90
06	315	5.2	240	3.7	115	2.3	3.9	3.00
07	350	5.7	230	4.3	109	2.8	4.4	2.85
08	360	6.3	220	4.7	105	3.2	4.8	2.90
09	370	6.6	210	5.0	103	3.5	5.6	2.80
10	380	6.7	200	5.2	103	3.6	5.4	2.80
11	430	6.6	200	5.2	101	3.8	5.0	2.65
12	410	6.8	200	5.2	101	3.9	4.8	2.70
13	410	6.8	200	5.2	102	3.9	4.5	2.70
14	410	7.0	210	5.2	102	3.8	4.5	2.75
15	390	7.2	210	5.0	105	3.7	4.2	2.75
16	380	7.2	220	4.9	105	3.5	4.0	2.80
17	340	7.2	225	4.6	109	3.1	3.7	2.85
18	305	7.2	240	3.8	112	2.6	3.7	2.90
19	270	7.2	250		123	1.9	3.1	2.90
20	250	7.2					3.9	2.90
21	260	7.0					3.5	2.80
22	270	6.6					3.6	2.75
23	270	6.4					3.8	2.80

Time: 75.0°W.

Sweep: 1.0 Mc to 25.0 Mc in 13.5 seconds.

Table 2

Tromsø, Norway (69.7°N, 19.0°E)								June 1956
Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	---	(5.30)					4.0	(2.55)
01	---	(5.10)					4.0	(2.55)
02	---	4.80					4.0	2.40
03	---	5.10	245				4.0	(2.55)
04	(405)	5.50	250	3.80	100	2.55	3.2	2.55
05	445	5.60	245	4.10	100	2.80	2.9	2.55
06	450	5.75	245	4.25	100	2.90	3.2	2.55
07	415	6.05	245	4.50	100	3.05	<3.6	2.60
08	420	6.10	240	4.65	100	3.20		2.60
09	435	6.40	225	4.70	100	3.30		2.70
10	410	6.35	230	4.85	100	3.30	<3.6	2.70
11	420	6.35	215	4.90	100	3.30		2.70
12	445	6.30	215	4.90	100	3.30		2.60
13	450	6.05	215	4.85	100	3.30	<3.5	2.65
14	490	6.00	210	4.70	100	3.30		2.60
15	470	5.90	225	4.60	100	3.20		2.60
16	425	5.85	240	4.60	100	3.10	3.8	2.70
17	(390)	5.90	245	4.40	100	3.00	3.2	(2.75)
18	---	5.90	250		105	2.80	3.9	2.80
19	---	6.00	250		105	2.40	4.0	2.80
20	---	5.70	295		105		4.0	2.85
21	---	5.60					4.0	2.70
22	---	5.20					4.0	2.60
23	---	(5.75)					4.0	(2.60)

Time: 15.0°E.

Sweep: 0.7 Mc to 25.0 Mc in 5 minutes, automatic operation.

Table 3

Uslø, Norway (60.0°N, 11.1°E)								June 1956
Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	300	5.90					<1.6	2.60
01	300	5.70					<1.3	2.55
02	300	5.50					2.0	2.55
03	320	5.40	300		110		1.7	2.60
04	270	5.55	265	3.15	105	1.85	<2.1	2.65
05	390	5.60	250	3.70	110	2.25	2.5	2.70
06	400	5.80	240	4.10	110	2.60	<2.9	2.70
07	410	6.05	240	4.55	105	2.90	3.1	2.65
08	400	6.30	230	4.65	100	3.10	3.5	2.70
09	415	6.75	225	4.95	100	3.30	3.8	2.75
10	400	6.80	220	5.00	100	3.40	3.8	2.70
11	400	6.80	220	5.10	100	3.45	<3.8	2.70
12	430	6.60	220	5.15	100		<3.8	2.70
13	400	6.65	220	5.20	100	3.50	3.4	2.75
14	430	6.50	220	5.10	105	3.50	3.4	2.65
15	410	6.60	220	5.10	100	3.40	3.3	2.70
16	390	6.70	225	4.90	105	3.35	<2.1	2.75
17	350	6.75	235	4.60	105	3.00	3.4	2.80
18	320	6.75	250		110	2.80	3.2	2.90
19	310	6.70	250		110	2.45	2.8	2.90
20	280	6.70	260			2.10	<2.6	2.90
21	275	6.50	280				<2.2	2.90
22	280	6.20					<1.7	2.75
23	295	5.90					<1.4	2.65

Time: 15.0°E.

Sweep: 0.7 Mc to 25.0 Mc in 5 minutes, automatic operation.

Table 4

Graz, Austria (47.1°N, 15.5°E)								June 1956
Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	300	6.9						
01	320	6.4						
02	310	6.5						
03	300	6.1						
04	300	6.0						
05	280	6.6	300	3.7				
06	300	6.8	250	4.0				
07	300	7.4	230	4.8			4.5	
08	330	7.8	230	4.9		(3.6)	4.8	
09	345	8.0	210	5.1		(3.9)	4.4	
10	330	8.0	210	5.2		(3.9)	4.0	
11	340	8.3	200	5.2		(3.9)	4.2	
12	340	8.0	210	5.2			4.5	
13	350	7.9	210	5.2		(3.9)	4.1	
14	355	7.5	220	5.1		(3.7)		
15	360	7.6	220	5.1			3.8	
16	330	7.7	220	5.0			3.8	
17	320	7.5	230	4.9				
18	300	7.8	240	4.1			4.0	
19	270	8.0					3.9	
20	260	8.0					4.2	
21	280	7.8						
22	300	7.4						
23	300	7.2						

Time: 15.0°E.

Sweep: 2.5 Mc to 12.0 Mc in 2 minutes.

Table 5

Ft. Monmouth, New Jersey (40.3°N, 74.1°W)								June 1956
Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	280	6.2					2.6	2.80
01	280	5.8					3.4	2.70
02	280	5.3					4.0	2.80
03	280	4.8					3.8	2.80
04	280	4.2					3.4	2.80
05	290	4.8	260		121		2.0	2.90
06	360	5.2	240	4.0	109	(2.6)	2.9	2.80
07	390	5.6	220	4.5	109	(3.0)	3.4	2.70
08	440	5.5	215	4.7	109	(3.3)	3.7	2.70
09	450	5.9	210	5.0	106	(3.5)	4.0	2.65
10	440	6.0	205	5.0	105	3.7	4.2	2.70
11	480	6.0	210	5.2	107	(3.7)	4.0	2.60
12	480	6.2	210	5.2	106		4.2	2.60
13	460	6.5	210	5.2	106	(3.9)	4.8	2.60
14	430	6.6	210	5.1	108	3.8	4.0	2.65
15	420	6.6	220	5.0	109	(3.6)	4.5	2.65
16	400	6.9	220	5.0	109	3.4	4.0	2.70
17	350	7.0	230	4.5	109	3.0	3.4	2.80
18	300	7.2	240		111	2.6	3.2	2.85
19	270	7.3					4.2	2.90
20	260	7.4					4.3	2.85
21	260	7.2					5.8	2.80
22	270	6.8					4.8	2.80
23	280	6.4					3.9	2.80

Time: 75.0°W.

Sweep: 1.0 Mc to 25.0 Mc in 13.5 seconds.

Table 6

White Sands, New Mexico (32.3°N, 106.5°W)								June 1956
Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	<300	5.6					4.2	2.60
01	280	5.6					4.1	2.70
02	280	5.4					4.0	2.70
03	270	5.3					2.8	2.70
04	270	5.0					3.0	2.70
05	280	4.9	275		120		1.6	2.80
06	290	5.7	240	(3.7)	113	(2.3)	3.5	2.90
07	340	6.6	220	4.4	109	(3.0)	4.5	2.80
08	370	6.6	210	4.7	(105)	(3.2)	5.2	2.70
09	400	7.1	200	5.0	(105)	(3.5)	4.9	2.65
10	400	7.6	200	5.0	(105)	(3.7)	6.0	2.60
11	400	7.8	200	5.2	(105)	(3.7)	5.2	2.60
12	400	8.5	200	5.2	(105)	(3.9)	4.9	2.60
13	380	8.0	205	5.2	(105)	(3.8)	4.4	2.65
14	370	7.9	210	5.1	107	(3.7)	4.4	2.65
15	380	7.8	215	5.0	(108)	(3.6)	4.6	2.70
16	370	7.5	220	4.8	107	(3.3)	4.2	2.70
17	340	7.4	235	4.6	109	(3.0)	4.2	2.80
18	<300	7.5	250		112	(2.5)	4.2	2.90
19	260	7.6					4.4	2.95
20	240	7.4					5.2	2.90
21	250	6.6					4.6	2.80
22	260	6.2					4.0	2.75
23	280	5.7					4.4	2.65

Time: 105.0°W.

Sweep: 1.0 Mc to 25.0 Mc in 13.5 seconds.

Table 7

Okinawa I. (26.3°N, 127.8°E)								June 1956
Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	310	9.0					3.8	2.65
01	290	9.0					5.2	2.80
02	280	8.5					4.4	2.85
03	270	7.2					3.5	2.80
04	280	7.5					3.8	2.75
05	270	7.1					3.5	2.80
06	250	7.6	260	---	134	(1.9)	3.4	3.00
07	250	8.2	240	---	113	(2.7)	4.7	3.10
08	(260)	7.9	225	---	111	(3.2)	6.2	3.05
09	(330)	7.9	210	---	111	(3.5)	7.4	2.80
10	370	8.3	210	---	111	(3.8)	7.0	2.70
11	410	9.0	200	(5.8)	111	(3.9)	6.6	2.50
12	400	10.0	220	(5.6)	111	(4.0)	6.5	2.55
13	370	10.8	220	(5.5)	111	(3.9)	5.8	2.65
14	370	11.2	220	(5.4)	111	(3.9)	6.6	2.70
15	360	11.9	225	---	111	(3.8)	7.0	2.70
16	340	11.6	230	---	111	3.5	5.8	2.70
17	320	12.1	235	---	111	(3.2)	5.8	2.80
18	300	11.8	245	---	117	(2.7)	5.8	2.80
19	270	11.2	265	---	---	---	5.1	2.80
20	270	9.9					4.2	2.70
21	310	8.8					3.0	2.50
22	330	8.8					3.2	2.55
23	320	9.0					2.6	2.55

Time: 135.0°E.

Sweep: 1.0 Mc to 25.0 Mc in 13.5 seconds.

Table 9

Narsarsuaq, Greenland (61.2°N, 45.4°W)								May 1956
Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00							4.4	---
01							4.3	---
02							3.9	---
03	(3.8)						4.3	(2.50)
04	(4.5)						4.3	(2.85)
05	(4.9)						3.5	(3.00)
06	(5.1)						2.8	(3.00)
07	5.6				113	2.4	3.0	2.90
08	5.8				110	2.8	3.0	2.80
09	6.0				(4.4)	105	3.0	2.90
10	6.2				(4.6)	107	3.2	2.80
11	6.4				(4.7)	103	3.3	2.80
12	6.7				4.8	108	(3.4)	2.80
13	6.7				(4.9)	105	(3.4)	2.70
14	6.8				(5.0)	103	(3.5)	2.70
15	7.0				(5.0)	101	(3.5)	2.70
16	(6.7)				(4.8)	105	(3.4)	2.70
17	(6.7)				(4.8)	101	3.3	2.75
18	(6.2)				(4.6)	103	(3.2)	(2.75)
19	(5.6)				(4.4)	109	3.0	(2.80)
20	(5.8)				(4.3)	111	2.7	(2.80)
21					---	121	2.4	(2.85)
22					---	111	---	2.6
23							4.3	---
							4.1	---
							4.4	---

Time: 45.0°W.

Sweep: 1.0 Mc to 25.0 Mc in 13.5 seconds.

Table 11

White Sands, New Mexico (32.3°N, 106.5°W)								May 1956
Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	300	5.8					3.4	2.60
01	<300	5.8					2.8	2.65
02	300	5.6					2.7	2.65
03	<300	5.4					3.0	2.65
04	280	5.2					3.0	2.65
05	290	5.1					2.1	2.70
06	280	6.0	250	3.6	<117	(2.3)	2.6	3.00
07	330	6.6	225	4.1	107	(2.8)	4.3	2.90
08	330	>7.4	215	4.5	(105)	(3.2)	4.7	2.75
09	370	8.0	200	4.9	(105)	(3.5)	5.0	2.65
10	380	8.5	200	5.3	(105)	(3.7)	4.9	2.60
11	380	9.1	205	5.4	(107)	(3.8)	4.7	2.65
12	350	9.3	205	5.3	(107)	(3.8)	4.0	2.65
13	360	9.7	220	5.4	(107)	(3.8)	4.5	2.65
14	350	9.6	220	5.3	(107)	(3.8)	4.2	2.70
15	340	9.4	<225	5.2	(107)	(3.6)	4.2	2.70
16	<330	9.2	225	4.8	(107)	(3.3)	4.0	2.80
17	300	9.2	235	(4.4)	109	(2.9)	4.1	2.80
18	270	9.1	250	---	114	---	3.7	2.90
19	240	8.4	---	---	---	---	3.4	2.95
20	240	7.6					4.1	2.85
21	230	6.5					4.6	2.75
22	<270	6.0					4.4	2.70
23	<300	5.7					3.4	2.65

Time: 105.0°W.

Sweep: 1.0 Mc to 25.0 Mc in 13.5 seconds.

Table 8

Tromsø, Norway (69.7°N, 19.0°E)								May 1956
Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	---	(5.40)	---	---	---	---	3.2	(2.55)
01	---	(6.20)	---	---	---	---	4.0	(2.60)
02	---	6.15	---	---	---	---	4.0	(2.60)
03	(340)	6.00	290	---	---	---	3.2	2.50
04	(385)	6.15	275	3.75	105	2.20	3.0	(2.60)
05	(380)	6.40	255	4.00	105	2.50		2.60
06	380	6.50	250	4.20	105	2.80		2.70
07	415	6.55	245	4.45	105	3.00		2.60
08	400	6.30	240	4.60	105	3.10		2.60
09	420	6.65	235	4.70	105	3.20		2.60
10	445	6.75	230	4.80	105	3.30		2.60
11	405	7.20	225	4.90	105	3.30		2.60
12	410	7.20	225	4.90	105	3.30		2.70
13	400	6.90	220	4.90	105	3.25		2.70
14	(430)	6.85	225	4.75	105	3.15		2.70
15	(370)	6.60	225	4.70	105	3.10		2.70
16	(410)	6.20	240	4.55	105	3.00	3.0	2.80
17	---	6.25	245	---	105	2.85	3.2	2.80
18	---	6.30	250	---	105	2.60	4.0	2.90
19	(260)	6.20	---	---	105	2.25	4.0	2.80
20	(255)	5.65	---	---	110	---	3.2	2.70
21	(290)	5.45	---	---	---	---	3.2	2.70
22	(295)	5.35	---	---	---	---	3.2	2.60
23	---	(6.20)	---	---	---	---	3.7	(2.70)

Time: 15.0°E.

Sweep: 0.7 Mc to 25.0 Mc in 5 minutes, automatic operation.

Table 10

Oslo, Norway (60.0°N, 11.1°E)								May 1956
Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	280	6.40					<1.4	2.60
01	290	6.15					<1.3	2.65
02	290	5.55					1.2	2.65
03	300	5.10			120	---	1.4	2.65
04	290	5.20	295	---	110	---	1.4	2.75
05	290	5.65	260	---	105	2.15	2.3	2.75
06	340	6.15	250	4.00	110	2.50	<2.6	2.80
07	390	6.90	240	4.25	110	2.80	3.0	2.75
08	390	6.90	230	4.55	110	3.10	3.4	2.70
09	375	6.85	230	4.75	105	3.30	3.4	2.75
10	370	7.20	225	4.90	105	3.40	3.6	2.75
11	375	7.55	220	5.20	105	3.50		2.75
12	350	7.60	220	5.00	105	3.45		2.75
13	390	7.50	230	4.95	105	3.45		2.75
14	400	7.50	220	4.95	105	3.50		2.75
15	350	7.50	220	4.95	110	3.40		2.75
16	340	7.50	220	4.70	105	3.20		2.80
17	320	7.50	230	4.55	100	2.90	<3.3	2.85
18	270	7.40	230	---	100	2.60	3.0	2.90
19	250	7.40	250	---	110	2.20	2.8	3.00
20	250	7.10	250	---	---	---	<2.4	3.05
21	260	6.70	---	---	---	---	<1.9	2.90
22	265	6.20	---	---	---	---	<1.4	2.75
23	280	6.40	---	---	---	---	<1.4	2.70

Time: 15.0°E.

Sweep: 0.7 Mc to 25.0 Mc in 5 minutes, automatic operation.

Table 12

Maui, Hawaii (20.8°N, 156.5°W)								May 1956
Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	300	8.4					3.8	2.75
01	280	8.0					3.3	2.85
02	270	7.2					2.2	2.80
03	290	6.8					2.9	2.70
04	310	6.6					3.3	2.65
05	290	6.4					3.1	2.65
06	280	6.2					4.0	2.65
07	270	7.7	240	---	119	2.60	5.0	2.70
08	300	8.8	230	---	111	3.10	5.8	2.55
09	330	9.7	225	5.40	109	3.40	7.2	2.40
10	380	10.5	215	5.40	109	3.60	7.0	2.40
11	380	11.6	220	5.60	109	3.80	6.6	2.50
12	370	12.6	215	5.70	109	4.00	6.8	2.65
13	360	12.4	220	5.70	109	4.00	5.7	2.65
14	370	12.3	225	5.90	109	3.90	6.4	2.65
15	350	12.7	220	5.40	109	3.70	5.3	2.70
16	340	12.6	230	5.20	111	3.50	5.7	2.75
17	310	12.5	240	---	118	3.00	4.6	2.85
18	280	12.2	260	---	121	2.30	4.1	2.90
19	260	11.8					4.3	2.90
20	270	10.5					3.7	2.75
21	290	9.4					4.4	2.65
22	310	9.0					4.2	2.60
23	310	9.0					3.8	2.70

Time: 150.0°W.

Sweep: 1.0 Mc to 25.0 Mc in 13.5 seconds.

Table 13

Puerto Rico, W. J. (18.5°N, 67.2°W)

May 1956

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	290	9.6					3.1	2.85
01	270	9.2					3.8	2.90
02	250	8.6					3.6	2.90
03	270	8.1					4.8	2.80
04	260	7.7					2.8	2.85
05	260	6.8					(2.8)	2.80
06	270	6.8	---	---	---	---	2.6	2.95
07	250	8.0	245		(109)	(2.5)		3.10
08	260	8.7	230	4.0	(109)	(3.1)	3.9	3.00
09	330	9.3	220	5.2	110	3.4	4.1	2.75
10	330	10.0	220	5.3	109	3.7	3.7	2.70
11	350	10.6	220	5.6	108	3.8		2.65
12	340	11.7	220	5.6	(109)	(4.0)	4.1	2.70
13	340	12.0	220	5.5	111	(4.0)		2.75
14	330	12.1	220	5.4	(111)	(3.9)	4.2	2.75
15	330	11.9	230	5.4	(111)	3.7	5.2	2.75
16	310	11.8	225	5.1	109	3.4	4.6	2.80
17	300	11.0	235	---	111	3.0	4.3	2.80
18	270	11.3	250	---	114	2.3	3.5	2.80
19	260	10.7					3.4	2.80
20	270	9.8					3.6	2.75
21	280	9.9					3.6	2.75
22	290	9.7					3.3	2.75
23	290	9.6					3.1	2.75

Time: 60.0°W.

Sweep: 1.0 Mc to 25.0 Mc in 13.5 seconds.

Table 15

Talara, Peru (4.6°S, 81.3°W)

May 1956

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	230	9.6						2.90
01	240	9.9						3.00
02	245	9.5						3.10
03	230	8.0						3.20
04	235	6.5					2.1	3.15
05	260	5.4					3.4	3.05
06	270	4.6					2.6	3.00
07	260	7.3			123	2.1	3.1	3.00
08	270	9.0	240	---	117	3.0	4.7	2.90
09	(270)	9.9	225	---	111	3.4	4.2	2.60
10	(250)	10.6	220	---	111	3.7	4.6	2.40
11	(225)	10.8	210	---	109	3.8	5.3	2.25
12	240	11.0	205	5.0	109	3.9	5.6	2.25
13	230	11.0	200	5.0	109	3.9	5.6	2.30
14	245	11.2	205	---	109	3.8	5.1	2.20
15	220	11.4	210	---	109	3.5	6.7	2.20
16	230	11.5	220	---	109	3.2	5.4	2.30
17	240	11.1	---	---	112	2.7	5.6	2.30
18	270	11.1					5.2	2.30
19	330	10.7					3.9	(2.25)
20	350	10.7					2.5	2.35
21	310	(10.8)					3.1	2.50
22	270	(10.6)					4.2	2.75
23	230	(9.7)					(3.1)	2.95

Time: 75.0°W.

Sweep: 1.0 Mc to 25.0 Mc in 13.5 seconds.

Table 17

Winnipeg, Canada (49.9°N, 97.4°W)

April 1956

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00		4.7					2.9	---
01		4.2					<2.8	---
02		4.2					3.0	---
03		4.4					3.0	---
04		4.3					3.2	---
05		4.4					<1.8	---
06		4.9			---	2.0	---	---
07		5.6		120	2.6		2.9	---
08		6.1	4.0	115	3.0		2.85	---
09		6.8	4.6	110	3.2		2.7	---
10		6.9	4.8	110	3.4		2.7	---
11		7.0	4.9	110	3.5		2.7	---
12		7.3	5.0	110	3.6		2.65	---
13		7.8	5.1	110	3.6		2.65	---
14		7.8	5.0	110	3.6		2.65	---
15		8.0	5.0	115	3.4		2.65	---
16		8.0	4.8	115	3.2		2.65	---
17		8.4	---	120	3.0		2.7	---
18		8.4		125	2.6		2.8	---
19		8.0		130	1.9		2.8	---
20		7.5		---	---	<1.7	2.8	---
21		6.8		---	---	<1.8	2.7	---
22		6.0		---	---	<1.6	2.7	---
23		5.2				<1.8	2.7	---

Time: 90.0°W.

Sweep: 1.0 Mc to 25.0 Mc in 15 seconds.

Table 14

Panama Canal Zone (9.4°N, 79.9°W)

May 1956

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	260	10.2						2.90
01	250	9.2						2.85
02	260	8.7						2.80
03	260	8.4					2.6	2.90
04	250	7.6					2.2	3.00
05	240	6.7					3.1	2.90
06	270	6.4					4.2	2.80
07	240	7.3	---	---	119	(2.5)	3.9	2.95
08	(260)	8.7	235	---	(111)	3.1	4.2	2.85
09	(280)	9.5	230	---	111	3.5	4.6	2.65
10	320	10.7	220	5.7	111	3.8	5.0	2.50
11	360	11.4	220	5.8	111	(3.9)	5.2	2.55
12	380	12.0	220	5.9	111	4.0	5.4	2.60
13	380	12.5	220	5.8	111	4.0	5.2	2.60
14	360	13.0	220	5.7	111	3.9	5.4	2.65
15	340	13.0	220	(5.7)	111	3.7	5.5	2.70
16	320	13.1	220	---	111	3.3	5.0	2.75
17	300	(12.3)	240	---	112	2.8	4.7	(2.75)
18	260	11.2	---	---	---	---	3.7	2.75
19	270	(10.5)					3.1	(2.70)
20	290	(10.3)					3.2	(2.60)
21	290	(10.6)					2.4	(2.60)
22	280	(10.7)					1.8	(2.70)
23	270	10.7					1.9	2.80

Time: 75.0°W.

Sweep: 1.0 Mc to 25.0 Mc in 13.5 seconds.

Table 16

Point Barrow, Alaska (71.3°N, 156.8°W)

April 1956

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00		(4.7)					6.4	----
01		(4.6)					5.6	----
02		---					5.0	----
03		(4.7)			---	---	4.0	----
04		(4.7)			121	(1.6)	2.3	(2.50)
05		(5.3)			118	1.8	2.5	(2.55)
06		(5.3)		(3.4)	111	(2.2)	3.0	----
07		(5.3)		(4.0)	109	---	3.1	----
08		(5.2)		(3.9)	111	2.8	3.9	(2.50)
09		(5.4)		4.3	111	3.0	3.9	(2.40)
10		5.8		(4.3)	111	3.2	3.5	(2.45)
11		6.0		4.4	111	3.2		2.50
12		6.0		4.7	111	(3.3)		2.55
13		6.1		(4.7)	111	3.1		2.60
14		6.5		(4.6)	111	3.1		2.55
15		(6.6)		(4.6)	111	(3.0)		(2.60)
16		(6.6)		(4.3)	111	(2.8)		(2.60)
17		6.6		(4.0)	111	2.6		2.65
18		(6.3)		---	117	(2.3)		2.75
19		(5.2)		---	117	(2.0)	2.5	(2.80)
20		(5.1)		---	115	(1.8)	3.2	(2.80)
21		(5.1)		---	---	---	3.8	(2.70)
22		(4.9)		---	---	---	4.0	(2.65)
23		(4.8)					4.5	----

Time: 150.0°W.

Sweep: 1.0 Mc to 25.0 Mc in 13.5 seconds.

Table 18

San Francisco, California (37.4°N, 122.2°W)

April 1956

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	<300	5.6					2.6	2.55
01	<300	5.4					2.5	2.50
02	(285)	5.4					2.4	2.55
03	(285)	5.2					2.4	2.55
04	<285	5.0					2.9	2.55
05	310	4.8					2.6	2.60
06	265	5.9	<270	(3.2)	<115	(1.9)	3.0	2.85
07	260	7.0	240	(4.1)	(109)	(2.5)	3.5	2.90
08	290	8.4	220	(4.4)	105	(3.0)	4.0	2.85
09	300	8.9	215	(4.6)	(105)	(3.3)	4.0	2.80
10	310	9.7	210	(4.8)	(105)	(3.4)	4.0	2.65
11	320	10.8	210	(5.2)	(105)	(3.6)	4.2	2.60
12	330	11.3	215	5.4	(105)	(3.6)	3.6	2.65
13	315	11.6	215	(5.4)	(105)	(3.6)		2.70
14	325	11.4	220	(5.6)	(105)	(3.5)		2.70
15	310	11.3	220	(5.1)	(105)	(3.4)		2.75
16	300	11.0	230	---	(107)	(3.2)		2.80
17	250	10.6	240	---	(109)	(2.8)	3.2	2.85
18	245	10.0	---	---	(115)	(2.1)	3.3	2.95
19	235	9.3					2.9	3.00
20	225	7.8					2.8	2.90
21	240	6.6					2.9	2.75
22	260	6.0					2.8	2.70
23	280	5.7					2.8	2.60

Time: 120.0°W.

Sweep: 1.0 Mc to 25.0 Mc in 13.5 seconds.

Table 19

Baguio, P. I. (16.4°N, 120.6°E)								April 1956
Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	240	14.6						3.20
01	230	12.3						3.30
02	220	9.0						3.00
03	230	7.6						2.90
04	260	7.1					2.3	2.60
05	250	6.5					1.8	2.85
06	270	7.5					2.6	2.90
07	250	9.9			115	(2.7)	4.0	2.95
08	240	11.5	---	---	111	3.2	6.0	2.70
09	(240)	12.8	230	---	111	3.5	5.9	2.50
10	---	12.7	220	---	(111)	(3.8)	5.6	2.40
11	---	13.0	220	---	---	4.0	4.5	2.30
12	---	13.0	210	---	---	4.0		2.35
13	---	13.0	215	---	---	4.0		2.30
14	---	13.5	220	---	---	3.9		2.40
15	---	14.0	230	---	---	3.6		2.40
16	240	13.5	240	---	114	(3.2)	3.5	2.50
17	260	13.7			119	2.6	3.8	2.50
18	280	13.4					2.8	2.40
19	360	(13.0)					2.0	(2.30)
20	360	13.5					2.0	2.40
21	310	13.5					2.0	2.60
22	280	14.0						2.80
23	260	15.2						3.10

Time: 120.0°E.

Sweep: 1.0 Mc to 25.0 Mc in 13.5 seconds.

Table 20

Resolute Bay, Canada (74.7°N, 94.9°W)								March 1956
Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00		5.7					<1.2	2.9
01		5.8						2.9
02		5.0						2.9
03		5.4						2.9
04		5.0				1.2		(3.0)
05		5.0			115	1.4		3.0
06		5.0			110	1.7		3.0
07		4.9			115	1.9		3.0
08		5.2			110	2.1		3.0
09		5.3			110	2.3		3.0
10		5.6			105	2.5		3.0
11		5.8			105	2.6		3.0
12		6.0			100	2.7		2.9
13		5.8			105	2.6		2.9
14		6.0			105	2.6		3.0
15		6.2			105	2.5		2.95
16		7.2			105	2.3		2.85
17		6.9			110	2.1		2.85
18		6.3			110	1.9		2.9
19		6.5			110	1.8		2.9
20		6.0			120	1.4		2.85
21		6.0			---	1.2		2.9
22		6.0			---	---		2.9
23		5.3					<1.1	2.75

Time: 90.0°W.

Sweep: 1.0 Mc to 25.0 Mc in 13.5 seconds.

Table 21

Churchill, Canada (58.8°N, 94.2°W)								March 1956
Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00		4.4			---	---	5.8	---
01		5.0			---	---	5.6	---
02		4.8			---	---	5.0	(2.8)
03		4.3			---	---	4.3	(2.85)
04		3.7			---	---	4.1	(2.8)
05		3.9			---	2.6	3.5	(2.8)
06		4.0			130	2.8	4.0	---
07		5.1			120	2.8	3.4	3.0
08		6.2			120	2.9		3.25
09		6.1			120	3.1	<3.2	3.1
10		6.8			115	3.1		3.0
11		7.5			110	3.3		3.0
12		8.2			110	3.2		3.0
13		9.0			115	3.2		2.95
14		9.5			110	3.2		3.0
15		8.6			110	3.2		3.0
16		7.0			120	2.9		3.0
17		7.2			120	2.6		3.0
18		6.6			130	2.1		3.0
19		6.0			120	2.4	3.3	2.95
20		5.0			125	2.0	4.5	2.9
21		4.8			---	---	4.0	(3.05)
22		5.0			---	---	5.5	(2.8)
23		4.8			---	---	5.0	(3.0)

Time: 90.0°W.

Sweep: 1.0 Mc to 16.0 Mc in 16 seconds.

Table 22

Ottawa, Canada (45.4°N, 75.9°W)								March 1956
Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00		4.5					<1.6	2.8
01		4.2			---	---	<1.6	2.8
02		4.0			---	---	<1.6	2.8
03		3.8			---	---	<1.6	2.8
04		3.6			---	---	<1.6	2.9
05		3.2			---	---	<1.6	2.9
06		3.9			---	1.8		3.1
07		6.1			115	2.2		3.1
08		7.2			110	2.9		3.2
09		8.0			110	3.2		3.1
10		9.0			110	3.4		3.1
11		9.8			110	3.7		3.0
12		10.1			110	3.7		3.0
13		10.2			110	3.7		2.9
14		10.4			110	3.6		2.95
15		10.3			110	3.4		3.0
16		10.0			110	3.0		3.0
17		9.9			115	2.6		3.0
18		9.2			125	1.8		3.0
19		8.2			---	---	<1.6	3.0
20		7.1			---	---	<1.6	3.0
21		6.6			---	---	<1.6	3.0
22		6.0			---	---	<1.6	2.9
23		5.0			---	---	<1.6	2.9

Time: 75.0°W.

Sweep: 1.0 Mc to 15.0 Mc in 15 seconds.

Table 23

Wakkanai, Japan (45.4°N, 141.7°E)								March 1956
Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	300	6.2						
01	290	6.2						
02	280	6.0						
03	270	6.0						
04	280	5.7						
05	280	5.7						
06	240	7.3						
07	230	8.6						
08	240	10.3						
09	250	10.7						
10	250	11.5						
11	250	11.8						
12	260	12.4						
13	250	12.1						
14	250	11.8						
15	250	11.4						
16	250	10.8						
17	240	10.4						
18	220	9.8						
19	230	8.3						
20	250	7.5						
21	250	7.0						
22	270	6.7						
23	290	6.5						

Time: 135.0°E.

Sweep: 1.0 Mc to 22.0 Mc in 1 minute.

Table 24

Akita, Japan (39.7°N, 140.1°E)								March 1956
Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	330	6.4					2.4	
01	340	6.5					2.4	
02	310	6.3					2.4	
03	300	6.0					2.5	
04	310	5.8					2.4	
05	320	5.7					2.2	
06	270	7.6					2.2	
07	250	9.5						
08	260	10.6						
09	260	11.5						
10	270	11.8						
11	280	12.0						
12	280	12.0						
13	290	12.6						
14	280	12.0						
15	280	11.8						
16	260	11.5						
17	270	11.0						
18	260	10.4					2.5	
19	250	8.5					2.5	
20	280	7.6					2.3	
21	290	7.2					2.0	
22	310	6.9					2.2	
23	310	6.5					2.2	

Time: 135.0°E.

Sweep: 0.65 Mc to 22.0 Mc in 2 minutes.

Table 25

Tokyo, Japan (35.7°N, 139.5°E)

March 1956

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	290	6.6						2.8
01	300	6.5						2.8
02	270	6.4					1.8	2.85
03	250	6.0					1.6	2.8
04	270	5.5					1.6	2.7
05	280	5.5						2.7
06	250	7.4			150	1.9		3.0
07	230	9.6	240	---	120	2.5	2.4	3.3
08	240	10.6	240	4.6	110	3.1	3.1	3.2
09	250	11.0	230	4.8	110	3.3	3.9	3.1
10	250	11.8	230	4.8	110	3.5	3.8	3.0
11	250	12.5	230	5.0	110	3.6	4.0	3.0
12	260	12.5	230	5.0	110	3.7	3.8	2.9
13	260	12.9	230	5.0	110	3.8	3.7	2.9
14	260	12.6	230	4.8	110	3.7	3.7	2.9
15	260	12.0	240	4.8	110	3.4	3.5	3.0
16	250	11.8	240	---	110	3.0	3.5	3.0
17	250	11.0	---	---	120	2.4	2.2	3.0
18	240	10.4			---		2.4	3.1
19	230	9.0					2.4	3.0
20	250	7.8						2.9
21	260	7.5						2.8
22	280	7.1						2.8
23	290	6.9						2.8

Time: 135.0°E.

Sweep: 1.0 Mc to 17.2 Mc in 2 minutes.

Table 27

Deception I. (63.0°S, 60.7°W)

March 1956

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	320	5.8						3.0
01	340	5.4						3.0
02	350	5.2					2.4	3.0
03	350	5.0					2.4	2.9
04	350	4.7					2.9	2.9
05	350	4.6					3.0	3.0
06	350	4.6					2.8	3.1
07	280	6.0					3.1	3.4
08	270	6.2					3.2	3.6
09	260	7.3					3.5	3.55
10	250	8.3					3.7	3.6
11	250	9.0					3.8	3.6
12	250	9.1					3.8	3.6
13	240	9.4					3.5	3.6
14	250	9.6					3.5	3.6
15	250	9.7					3.4	3.6
16	250	9.0					3.4	3.6
17	250	8.8					3.4	3.6
18	250	9.2					3.3	3.6
19	250	8.6					3.3	3.6
20	260	8.2					3.2	3.5
21	280	7.0					2.4	3.35
22	300	7.1					3.2	3.2
23	310	6.6						3.0

Time: 60.0°W.

Sweep: 1.5 Mc to 16.0 Mc in 15 minutes, manual operation.

Table 29*

Slough, England (51.5°N, 0.6°W)

February 1956

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	295	3.6					2.0	2.6
01	295	3.5					2.4	2.6
02	290	3.3					2.4	2.6
03	295	3.2					2.4	2.6
04	285	2.7					2.5	2.65
05	280	2.7					2.3	2.7
06	275	2.6					2.3	2.75
07	255	4.0			(170)	1.6	2.6	2.9
08	240	6.3			130	2.0	3.1	3.2
09	235	7.5	(240)	(3.7)	120	2.5	3.3	3.2
10	245	8.8	230	4.0	120	2.9	3.6	3.15
11	250	8.8	225	4.1	120	3.1	3.6	3.15
12	250	9.2	230	4.1	120	3.2	3.2	3.15
13	245	9.2	225	4.1	120	3.1	3.1	3.1
14	245	9.4	225	4.0	120	3.0	3.5	3.05
15	240	9.3	230	3.7	125	2.8	2.9	3.05
16	235	9.3			125	2.4	3.5	3.15
17	225	8.1			130	1.8	2.5	3.15
18	225	6.9					2.2	3.05
19	240	6.0					2.3	3.0
20	250	4.6						2.85
21	280	4.0						2.7
22	300	3.6						2.65
23	300	3.7						2.6

Time: 0.0°.

Sweep: 0.55 Mc to 16.5 Mc in 5 minutes.

*Average values except foF2 and fEs, which are median values.

Table 26

Yamagawa, Japan (31.2°N, 130.6°E)

March 1956

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	280	7.5						
01	280	7.0						2.0
02	260	7.0						
03	240	7.0						
04	240	6.0						2.0
05	250	5.6						
06	270	5.7						
07	240	8.2						
08	230	10.0						
09	240	11.0						
10	240	12.0						
11	250	12.8						4.7
12	250	13.5						
13	250	13.6						
14	250	14.4						
15	250	13.7						
16	250	13.6						
17	240	13.2						3.2
18	240	12.5						3.0
19	240	11.0						3.0
20	230	9.5						2.4
21	250	8.6						2.3
22	250	8.2						2.2
23	270	8.1						

Time: 135.0°E.

Sweep: 1.0 Mc to 22.0 Mc in 1 minute.

Table 28*

Inverness, Scotland (57.4°N, 4.2°W)

February 1956

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	325	(3.2)						---
01	325	(3.0)						---
02	320	(2.3)						---
03	325	(2.4)						---
04	310	(2.2)						---
05	300	2.3						(2.7)
06	285	2.4						---
07	260	2.9						---
08	240	4.9			140	1.7	2.3	3.0
09	235	6.4	---	---	120	2.1	2.7	(3.1)
10	235	7.1	---	---	115	2.4	2.8	3.2
11	245	7.8	225	---	115	2.7		3.2
12	245	8.1	230	(3.7)	115	2.8		3.1
13	240	8.3	(230)	(3.7)	115	2.8		3.1
14	240	8.8	220	---	115	2.7		3.2
15	240	8.2	235	---	120	2.4		3.2
16	235	8.5			125	2.2	2.3	3.2
17	225	7.6			(140)	1.8		3.1
18	220	6.6						3.1
19	240	5.2						(2.9)
20	260	3.8						---
21	295	3.2						---
22	310	2.7						---
23	315	3.0						---

Time: 0.0°.

Sweep: 0.67 Mc to 25.0 Mc in 5 minutes.

*Average values except foF2 and fEs, which are median values.

Table 30*

Singapore, British Malaya (1.3°N, 103.8°E)

February 1956

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	220	7.9						2.9
01	250	7.6						2.8
02	250	6.9						2.9
03	250	6.2						2.9
04	250	5.9						3.0
05	250	5.4						3.0
06	255	4.3						3.1
07	250	7.5			130	2.4	3.2	3.1
08	9.1	240			120	3.1	3.8	2.8
09	9.5	225			110	3.5	4.8	2.5
10	10.3	215			110	3.8	4.4	2.2
11	10.8	210			110	3.9		2.1
12	(11.0)	205	(5.0)		110	4.0		(2.2)
13	(10.7)	200			110	4.0	4.7	(2.2)
14	11.3	210			110	3.9		2.2
15	10.9	210			110	3.7	4.4	2.2
16	10.9	225			110	3.3	4.8	2.2
17	(255)	11.3	240		115	2.7	4.4	2.3
18	280	11.2			160	2.2	3.3	2.3
19	335	10.8					3.0	2.3
20	340	10.4					2.0	2.4
21	290	11.0					2.6	(2.7)
22	245	11.3					3.2	3.0
23	220	9.8						3.1

Time: 105.0°E.

Sweep: 0.67 Mc to 25.0 Mc in 5 minutes.

*Average values except foF2 and fEs, which are median values.

Table 31*

Falkland Is. (51.7°S, 57.8°W)								February 1956
Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	295	7.6					>3.1	2.6
01	310	7.4					2.9	2.5
02	305	7.3					3.1	2.5
03	300	7.0					2.4	2.6
04	300	6.6					2.4	2.5
05	305	6.8	290		(140)	(1.6)	2.2	2.6
06	255	7.3	250		125	2.1	4.0	2.8
07	315	8.2	240	(4.3)	115	2.7	5.2	2.8
08	300	8.7	235		110	3.1	4.8	2.8
09	315	9.1	235	5.0	110	3.4	5.0	2.8
10	350	8.7	225	(4.9)	105	3.5	5.1	2.8
11	320	9.6	225	5.0	105	3.6	5.3	2.8
12	315	9.8	230	5.1	105	3.7	5.4	2.9
13	310	9.3	225	5.1	105	3.6	4.9	2.9
14	310	9.4	230	5.1	105	3.5	4.9	2.9
15	305	8.7	235	5.0	105	3.4	4.8	3.0
16	290	8.1	240	(4.7)	110	3.2	5.0	3.0
17	270	8.4	(245)		115	2.8	5.0	3.1
18	260	7.9			120	2.2	4.7	3.0
19	260	8.1					4.8	3.0
20	265	7.7					4.6	2.8
21	275	7.5					4.0	2.7
22	285	7.6					3.9	2.6
23	290	7.9					3.1	2.6

Time: 60.0°W.

Sweep: 0.67 Mc to 25.0 Mc in 5 minutes.

*Average values except foF2 and fEs, which are median values.

Table 32*

Inverness, Scotland (57.4°N, 4.2°W)								January 1956
Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	335	(2.0)						---
01	330	(2.0)						---
02	325	(1.8)						---
03	330	(1.7)						---
04	315	1.8						(2.6)
05	295	2.0						(2.7)
06	285	(2.2)						(2.9)
07	270	(2.2)						---
08	255	3.0			150	1.2		---
09	235	5.1			120	1.7	2.4	3.2
10	230	6.6			130	2.0	2.8	3.3
11	230	7.2			125	2.2	2.8	3.4
12	230	8.0	(220)	---	120	2.3	2.7	3.3
13	235	8.2	(240)	---	130	2.2	2.8	3.3
14	235	7.8			135	2.2	2.8	3.4
15	230	7.3			(130)	1.9		3.3
16	225	6.8			---	1.7	2.4	3.3
17	235	6.0						3.2
18	245	4.5						2.9
19	280	2.9						3.0
20	290	2.4						---
21	325	(2.3)						---
22	335	(2.1)						---
23	335	(2.0)						---

Time: 0.0°.

Sweep: 0.67 Mc to 25.0 Mc in 5 minutes.

*Average values except foF2 and fEs, which are median values.

Table 33*

Slough, England (51.5°N, 0.6°W)								January 1956
Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	305	3.0					2.1	2.6
01	300	2.8					2.6	2.65
02	310	2.7					2.4	2.6
03	305	2.3					2.4	2.6
04	305	2.3					2.6	2.65
05	290	2.4					2.5	2.7
06	290	2.3					2.5	2.75
07	275	2.4					2.6	2.75
08	235	5.0			145	1.7	3.2	3.2
09	230	6.8			140	2.1	3.9	3.3
10	235	7.7	235	3.6	130	2.5	4.1	3.35
11	240	8.5	225	3.7	130	2.7	4.0	3.25
12	240	8.7	225	3.7	130	2.8	4.2	3.3
13	235	8.5	225	3.6	130	2.7	4.2	3.2
14	240	8.4	235	3.5	130	2.6	4.1	3.2
15	230	7.7			135	2.3	3.8	3.25
16	225	7.0			145	1.8	3.3	3.25
17	225	6.4					2.4	3.2
18	230	5.3					1.8	3.1
19	255	4.0					2.2	2.9
20	280	3.2						2.75
21	305	3.0					2.1	2.65
22	320	3.1						2.6
23	310	3.0						2.6

Time: 0.0°.

Sweep: 0.55 Mc to 16.5 Mc in 5 minutes.

*Average values except foF2 and fEs, which are median values.

Table 34*

Singapore, British Malaya (1.3°N, 103.8°E)								January 1956
Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	260	7.2					1.6	2.7
01	265	7.3						2.8
02	260	6.6						2.9
03	255	5.4						3.0
04	265	4.4						2.9
05	270	4.0					2.0	2.9
06	285	4.4				(1.2)	2.1	2.9
07	245	7.0			125	2.3	3.3	3.0
08	(240)	8.3	235		115	3.0	4.0	2.7
09		9.0	225		110	3.4	4.3	2.4
10		9.4	210		110	3.7	5.4	2.1
11		10.0	210		110	3.8	5.1	2.0
12	400	10.4	200	(5.3)	110	3.8	5.4	2.1
13	380	10.4	205		110	3.8	5.2	(2.2)
14	(375)	(10.2)	205		110	3.7	5.0	(2.2)
15		10.2	210		110	3.5	4.4	2.1
16		10.3	235		110	3.1	4.2	2.1
17	(250)	10.2	245		120	2.6	4.2	2.4
18	280	10.1			(150)	2.0	3.4	2.4
19	330	9.9					3.5	2.3
20	335	9.5					3.3	2.3
21	295	9.7					3.0	2.5
22	250	9.6					2.8	2.9
23	235	7.6						2.8

Time: 105.0°E.

Sweep: 0.67 Mc to 25.0 Mc in 5 minutes.

*Average values except foF2 and fEs, which are median values.

Table 35*

Falkland Is. (51.7°S, 57.8°W)								January 1956
Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	250	7.9					3.1	2.5
01	270	7.6					2.3	2.6
02	300	7.2					2.6	2.6
03	305	7.1					1.8	2.6
04	290	7.2	300			(1.5)	1.8	2.5
05	345	7.4	260	(3.8)	135	2.1	3.1	2.5
06	340	7.3	245	(4.2)	120	2.6	4.4	2.5
07	385	7.1	235	4.6	110	3.0	5.2	2.5
08	385	7.2	225	4.9	110	3.2	4.9	2.6
09	380	7.8	225	5.0	105	3.5	5.5	2.6
10	355	7.8	220	5.1	105	3.6	5.3	2.6
11	345	8.2	220	5.2	105	3.6	4.9	2.6
12	340	8.6	220	5.2	105	3.7	5.0	2.7
13	330	8.2	230	5.1	105	3.6	5.0	2.8
14	335	8.0	235	5.1	105	3.6	4.9	2.8
15	340	7.8	230	4.9	105	3.4	5.2	2.8
16	325	7.8	230	4.8	110	3.2	5.3	2.9
17	315	7.8	245	4.6	115	2.9	4.9	2.9
18	310	8.0	(245)	4.3	120	2.5	5.1	2.9
19	290	7.7	260	3.7	130	2.0	4.7	2.9
20	280	7.6					4.5	2.8
21	280	7.8					3.1	2.6
22	290	8.2					2.4	2.6
23	305	8.0					2.5	2.6

Time: 60.0°W.

Sweep: 0.67 Mc to 25.0 Mc in 5 minutes.

*Average values except foF2 and fEs, which are median values.

Table 36*

Port Lockroy (64.8°S, 63.5°W)								January 1956
Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	---		300	2.3			3.1	---
01	(6.4)		315	2.3			2.8	---
02	(370)	6.3	330	2.5			2.2	---
03	(375)	6.4	300	2.8				---
04	(360)	6.2	270	3.1			2.2	2.6
05	370	6.2	260	3.8		2.3	3.4	2.6
06	385	6.5	250	4.1		2.5	4.3	2.5
07	380	7.0	240	4.3		2.3	4.1	2.6
08	380	6.6	240	4.1	105	3.0	5.2	2.7
09	410	6.1	230	4.6	105	3.1	5.2	2.8
10	385	6.0	(225)	4.7	105	3.2	5.6	2.7
11	395	5.9	230	4.9	105	3.2	5.4	2.9
12	415	5.9	245	4.9	105	3.3	5.4	2.9
13	395	6.0	230	4.9	(105)	(3.4)	4.8	2.8
14	390	6.0	240	4.8	(105)	(3.3)	5.3	2.8
15	375	6.3	245	4.7	105	3.2	5.0	2.8
16	360	6.5	235	4.6	105	3.1	4.7	2.8
17	330	6.6	240	4.5	105	2.9	5.3	2.8
18	360	6.8	240	4.3	105	2.7	5.2	2.9
19	310	6.8	245	3.9		2.4	5.5	2.9
20	300	7.1	255	3.4		2.1	4.7	2.8
21	(300)	7.7	275	2.9		(1.8)	2.3	2.7
22	(300)	(7.7)	285	2.8		(1.3)	2.5	2.7
23	---		295	2.4			3.0	---

Time: 60.0°W.

Sweep: 0.67 Mc to 25.0 Mc in 5 minutes.

*Average values except foF2 and fEs, which are median values.

Table 37*

Falkland Is. (51.7°S, 57.8°W)

December 1955

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	300	8.7	---	---	---	---	3.4	2.5
01	305	8.8	---	---	---	---	3.1	2.5
02	305	8.6	---	---	---	---	3.6	2.6
03	315	8.3	---	---	---	---	2.6	2.5
04	310	8.8	275	3.1	145	1.6	2.7	2.5
05	330	9.0	250	3.9	125	2.1	3.4	2.5
06	335	9.8	240	4.5	110	2.7	4.8	2.5
07	340	9.8	240	5.0	105	3.1	5.5	2.5
08	340	9.8	230	5.1	105	3.3	5.4	2.5
09	350	9.8	220	5.1	105	3.5	5.5	2.6
10	350	9.9	220	5.3	100	3.6	5.5	2.6
11	345	10.1	220	5.3	100	3.6	5.4	2.7
12	350	9.8	220	5.3	100	3.6	5.2	2.7
13	340	9.4	230	5.3	105	3.7	5.3	2.7
14	335	9.0	230	5.2	105	3.6	5.2	2.8
15	330	8.4	230	5.1	105	3.5	5.6	2.8
16	320	8.1	235	5.0	105	3.2	5.6	2.8
17	310	8.0	240	4.7	110	2.9	5.8	2.9
18	305	7.9	245	4.4	115	2.5	5.3	2.8
19	285	8.5	260	3.9	130	1.9	4.6	2.8
20	275	8.4	---	---	145	1.6	3.5	2.7
21	295	8.8	---	---	---	---	3.3	2.6
22	300	8.9	---	---	---	---	3.1	2.6
23	305	8.9	---	---	---	---	3.3	2.5

Time: 60.0°W.

Sweep: 0.67 Mc to 25.0 Mc in 5 minutes.

*Average values except foF2 and fEs, which are median values.

Table 38

Port Lockroy (64.8°S, 63.5°W)

December 1955

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	---	---	295	2.2	---	---	(5.4)	---
01	---	---	285	2.3	---	---	5.2	---
02	---	(8.1)	300	2.4	---	---	3.9	---
03	---	---	280	2.8	---	---	3.7	---
04	---	---	255	3.2	(110)	(2.1)	3.8	---
05	(325)	8.3	245	3.9	105	2.4	4.0	2.6
06	(325)	8.4	235	4.2	105	2.7	5.0	2.6
07	325	8.5	235	4.4	100	2.9	5.8	2.7
08	335	8.1	225	4.7	100	3.1	5.5	2.7
09	340	8.1	(220)	4.7	100	3.1	5.9	2.8
10	360	7.6	(210)	5.0	100	3.1	6.2	2.7
11	350	7.0	(220)	4.9	(100)	(3.3)	6.1	2.8
12	345	6.8	(205)	4.9	(100)	(3.2)	6.1	2.8
13	350	6.6	210	5.0	(100)	(3.3)	6.4	2.9
14	350	6.6	220	4.9	(100)	(3.3)	6.2	2.9
15	345	6.7	(225)	4.9	(100)	(3.2)	5.6	2.9
16	340	6.6	(245)	4.8	100	3.1	6.0	2.9
17	330	6.8	235	4.5	105	3.0	5.6	2.8
18	320	7.1	240	4.4	100	2.8	5.9	2.8
19	305	7.6	(240)	4.0	105	2.4	5.6	2.8
20	300	7.9	(255)	(3.3)	105	2.1	5.6	2.8
21	295	8.4	265	2.7	(105)	1.8	3.9	2.7
22	(305)	8.0	280	2.5	(110)	(1.6)	3.7	2.6
23	---	---	290	2.4	---	---	(2.9)	---

Time: 60.0°W.

Sweep: 0.67 Mc to 25.0 Mc in 5 minutes.

*Average values except foF2 and fEs, which are median values.

Table 39*

Port Lockroy (64.8°S, 63.5°W)

November 1955

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	295	(6.7)	285	2.1	---	---	(2.5)	---
01	310	(6.1)	295	2.1	---	---	1.3	---
02	335	(6.3)	290	2.6	---	---	---	---
03	(245)	(5.5)	290	2.6	---	---	---	2.4
04	(335)	(5.6)	265	3.0	(105)	(1.7)	---	2.6
05	(355)	(5.6)	255	3.4	105	2.2	---	2.7
06	(370)	5.6	245	4.2	105	2.5	3.2	2.8
07	(350)	6.3	(235)	4.4	105	2.8	4.3	2.8
08	310	7.0	(230)	4.5	105	3.0	5.3	2.8
09	315	6.8	(225)	4.6	105	3.1	5.2	2.9
10	(320)	6.2	(220)	(4.7)	95	3.2	4.8	2.9
11	350	6.6	(220)	(4.8)	(105)	(3.3)	5.3	3.1
12	350	6.4	(225)	(4.7)	(105)	(3.3)	4.9	3.0
13	315	6.4	(220)	(4.7)	(105)	(3.4)	5.2	3.1
14	320	6.4	(215)	(4.7)	(105)	(3.4)	5.2	3.0
15	310	6.5	(230)	(4.6)	105	3.2	4.0	3.0
16	310	6.7	(245)	(4.3)	105	3.0	4.1	3.1
17	295	6.8	(245)	(4.6)	105	2.8	5.4	3.1
18	290	7.2	(245)	(4.2)	105	2.5	4.3	3.0
19	290	7.6	255	3.3	105	2.0	2.8	2.9
20	275	7.5	270	2.7	105	1.9	2.4	2.9
21	(300)	(8.5)	270	2.5	---	---	2.0	2.7
22	(310)	(8.0)	280	2.3	---	---	2.0	---
23	(295)	(7.0)	285	2.2	---	---	2.9	---

Time: 60.0°W.

Sweep: 0.67 Mc to 25.0 Mc in 5 minutes.

*Average values except foF2 and fEs, which are median values.

Table 40

Point Barrow, Alaska (71.3°N, 156.8°W)

October 1955

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	---	---	---	---	---	---	6.6	---
01	---	---	---	---	---	---	5.6	---
02	---	---	---	---	---	---	5.8	---
03	---	---	---	---	---	---	4.6	---
04	---	---	---	---	---	---	4.3	---
05	---	---	---	---	---	---	4.4	---
06	(3.3)	---	---	---	---	---	4.4	---
07	(3.7)	---	---	---	---	---	4.3	---
08	(4.0)	---	---	---	---	---	3.7	(3.1)
09	4.5	---	---	---	---	---	3.4	3.1
10	4.8	---	---	---	---	---	3.9	3.2
11	4.8	---	---	(3.4)	120	2.0	3.0	3.15
12	5.0	---	---	---	110	2.0	2.9	3.2
13	5.4	---	---	---	---	---	<2.4	3.2
14	5.4	---	---	---	---	---	<2.4	3.2
15	5.6	---	---	---	---	---	1.8	3.2
16	5.6	---	---	---	---	---	<2.0	3.2
17	(5.4)	---	---	---	---	---	<1.9	3.2
18	(4.7)	---	---	---	---	---	2.4	(3.15)
19	(3.5)	---	---	---	---	---	2.8	(3.2)
20	(3.0)	---	---	---	---	---	3.7	(3.0)
21	---	---	---	---	---	---	4.2	---
22	---	---	---	---	---	---	5.4	---
23	---	---	---	---	---	---	5.7	---

Time: 150.0°W.

Sweep: 1.0 Mc to 25.0 Mc in 13.5 seconds.

Table 41*

Ibadan, Nigeria (7.4°N, 4.0°E)

October 1955

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	236	(8.5)	---	---	---	---	5.2	---
01	234	8.3	---	---	---	---	5.4	(3.0)
02	231	(6.7)	---	---	---	---	6.4	(3.3)
03	232	(5.2)	---	---	---	---	6.8	---
04	233	(4.4)	---	---	---	---	6.8	(3.3)
05	237	(2.6)	---	---	---	---	8.6	(3.3)
06	248	6.7	---	---	129	1.90	8.8	---
07	267	9.0	226	---	119	2.72	9.8	3.1
08	295	9.8	211	---	115	3.18	12.9	2.7
09	315	9.5	206	---	111	3.38	14.0	2.4
10	328	9.2	203	4.90	110	3.57	14.2	2.5
11	329	9.1	200	(4.86)	109	3.64	14.0	2.5
12	384	9.7	200	(4.90)	110	3.65	13.8	2.4
13	326	10.2	200	(4.74)	111	3.55	13.3	2.5
14	(308)	10.6	204	---	110	3.35	13.2	2.5
15	---	10.8	202	---	118	3.08	13.3	2.4
16	---	10.8	211	---	113	2.58	12.6	2.3
17	250	10.4	---	---	120	1.80	7.2	2.3
18	318	9.8	---	---	---	(1.04)	6.6	2.2
19	342	(8.9)	---	---	---	---	4.6	---
20	307	(8.6)	---	---	---	---	3.1	---
21	271	(9.8)	---	---	---	---	3.6	---
22	257	---	---	---	---	---	3.8	---
23	239	(9.0)	---	---	---	---	4.6	---

Time: 0.0°.

Sweep: 0.67 Mc to 25.0 Mc in 5 minutes.

*Average values except foF2 and fEs, which are median values.

Table 42

Lulea, Sweden (65.6°N, 22.1°E)

June 1955

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	265	---	---	---	---	---	2.5	---
01	---	---	---	---	---	---	---	---
02	255	---	---	---	---	---	2.6	---
03	---	---	---	---	---	---	---	---
04	340	4.5	210	3.5	110	2.2	---	---
05	---	---	---	---	---	---	---	---
06	375	4.6	205	3.8	100	2.5	---	---
07	---	---	---	---	---	---	---	---
08	380	5.0	210	4.2	100	2.7	---	---
09	---	---	---	---	---	---	---	---
10	365	4.9	200	4.2	100	2.6	---	---
11	---	---	---	---	---	---	---	---
12	375	5.1	210	4.3	100	2.5	---	---
13	---	---	---	---	---	---	---	---
14	360	4.8	210	4.2	100	2.5	---	---
15	---	---	---	---	---	---	---	---
16	350	4.8	200	4.0	100	2.6	---	---
17	---	---	---	---	---	---	---	---
18	300	4.7	210	3.7	110	2.3	---	---
19	---	---	---	---	---	---	---	---
20	240	(4.5)	---	---	---	---	1.8	2.6
21	---	---	---	---	---	---	---	---
22	260	---	---	---	---	---	---	---
23	---	---	---	---	---	---	---	---

Time: 15.0°E.

Sweep: 1.5 Mc to 10.0 Mc in 6 minutes, automatic operation.

Table 43

Poitiers, France (46.6°N, 0.3°E)

February 1955

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	250	3.4						---
01	<260	3.4						(3.05)
02	260	3.4						(3.0)
03	260	3.4						3.0
04	260	3.2						---
05	250	2.8						---
06	235	2.6						---
07	225	3.6	---	---	---	E		3.4
08	225	4.8	205	2.6	---	1.9	1.9	3.65
09	230	5.4	200	3.4	110	2.3	2.4	3.7
10	245	5.8	210	3.8	105	2.6	2.6	3.6
11	250	6.2	210	4.0	105	2.8		3.6
12	245	6.2	210	4.0	105	2.9		3.65
13	245	5.9	200	3.9	105	2.9		3.55
14	240	5.9	215	3.8	105	2.8		3.65
15	240	5.9	220	3.8	110	2.5		3.5
16	230	5.8	225	(3.0)	115	2.1	2.5	3.55
17	220	5.5	225	(2.1)	---	E	2.4	3.6
18	220	4.8					2.3	3.35
19	230	4.6					2.1	(3.3)
20	<230	4.0						(3.3)
21	<235	3.5						(3.2)
22	250	3.4						(3.15)
23	250	3.4						(3.1)

Time: 0.0°.

Sweep: 1.6 Mc to 16.8 Mc in 1 minute.

Table 44

Casablanca, Morocco (33.6°N, 7.6°W)

February 1955

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	---	3.2						3.0
01	---	3.1						3.0
02	---	3.1						3.05
03	---	3.1						3.1
04	---	3.1						3.1
05	---	3.0						3.15
06	---	2.6						3.3
07	225	3.2						3.3
08	230	5.5	225	(2.9)	135	1.9	2.4	3.7
09	235	6.2	215	3.8	110	2.5		3.7
10	250	6.4	205	4.1	105	2.8	3.2	3.6
11	250	7.0	205	4.3	105	3.0		3.6
12	260	6.7	200	4.4	105	3.1		3.5
13	260	6.4	200	4.4	105	3.1		3.5
14	260	6.5	205	4.4	105	3.1		3.5
15	255	6.5	225	4.2	110	2.9		3.4
16	250	6.6	225	4.0	110	2.7		3.4
17	245	(6.7)	240	(3.4)	120	2.2	3.6	3.55
18	230	6.4					2.9	3.7
19	<205	(5.1)					2.4	(3.5)
20	---	3.9					2.5	3.3
21	---	3.5					3.0	3.3
22	---	3.3					2.9	3.25
23	---	3.1					2.1	3.1

Time: 0.0°.

Sweep: 1.6 Mc to 16.0 Mc in 1 minute 15 seconds.

Table 45

Macquarie I. (54.5°S, 159.0°E)

October 1954

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	(340)	---					4.0	(2.9)
01	(310)	2.5					2.7	(3.0)
02	(300)	2.3					2.0	2.9
03	(290)	(2.5)						(2.9)
04	280	2.2			---	---		3.15
05	260	2.8			120	---		3.2
06	260	3.4	230	3.0	110	2.1		3.2
07	320	3.8	230	3.5	110	2.5		3.1
08	320	4.0	230	3.8	110	2.7		3.1
09	370	4.2	220	3.8	110	3.0		2.95
10	380	4.4	220	3.9	100	3.0		2.9
11	380	4.5	220	4.0	100	3.0		2.9
12	380	4.6	220	4.0	100	3.0		2.95
13	360	4.5	210	4.0	100	3.0		2.9
14	350	4.7	200	4.0	110	3.0		3.0
15	340	4.9	220	3.8	110	2.8		3.1
16	330	4.6	230	3.7	110	2.5		3.0
17	290	4.8	240	3.4	120	2.4		3.0
18	270	4.6	240	2.7	120	2.0		3.1
19	250	4.1	---	---			2.4	3.1
20	260	3.6	---	---			2.5	3.1
21	280	2.9					2.8	3.1
22	320	2.7					2.4	2.9
23	(300)	(3.1)					3.3	(2.9)

Time: 157.5°E.

Sweep: 1.0 Mc to 13.0 Mc in 1 minute 55 seconds.

Table 46

Macquarie I. (54.5°S, 159.0°E)

September 1954

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	---	---					3.6	---
01	---	---					3.3	---
02	---	---					3.1	---
03	---	---					2.6	---
04	---	---						---
05	---	---						---
06	280	2.7	---	---	---	---	2.2	3.1
07	270	3.4	230	2.7	120	2.0		3.2
08	320	3.7	240	3.3	120	2.4		3.1
09	360	3.9	220	3.7	120	2.7		2.9
10	420	4.0	220	3.7	120	2.7		2.9
11	420	4.1	230	3.8	110	2.8		2.8
12	430	4.2	220	3.8	105	2.8		2.8
13	380	4.2	220	3.8	100	2.8		2.9
14	380	4.3	220	3.7	110	2.7		2.9
15	340	4.4	230	3.5	120	2.5		3.0
16	320	4.1	240	3.3	120	2.2		3.0
17	270	4.0	240	2.6	130	2.0		3.1
18	280	3.4	---	---	---	---	3.0	2.9
19	300	2.9					3.7	3.0
20	300	2.4					4.1	3.0
21	300	2.2					3.5	2.95
22	---	---					4.0	---
23	(330)	(2.0)					3.2	(3.1)

Time: 157.5°E.

Sweep: 1.0 Mc to 13.0 Mc in 1 minute 55 seconds.

Table 47

Macquarie I. (54.5°S, 159.0°E)

August 1954

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	---	---					4.3	---
01	---	---					3.9	---
02	---	---					3.4	---
03	---	---					2.9	---
04	---	---					3.2	---
05	---	---					2.5	---
06	---	---					2.1	---
07	250	2.5	230	---	---	1.7		3.3
08	250	3.4	220	2.5	100	1.9		3.4
09	250	3.7	220	3.0	100	2.4		3.3
10	300	3.8	220	3.3	100	2.5		3.2
11	310	4.0	220	3.5	100	2.5		3.2
12	300	4.1	220	3.5	110	2.6		3.2
13	300	4.1	210	3.5	110	2.5		3.2
14	290	4.2	220	3.5	100	2.4		3.2
15	270	4.1	220	3.2	110	2.1		3.3
16	250	3.9	220	2.6	120	2.0		3.3
17	250	3.5	230	2.4	100	1.8		3.2
18	270	2.7	---	---			3.1	
19	305	2.2					2.7	3.15
20	340	2.1					3.0	3.0
21	(295)	(2.2)					3.3	(3.2)
22	(320)	(2.4)					3.8	(3.0)
23	---	---					4.2	---

Time: 157.5°E.

Sweep: 1.0 Mc to 13.0 Mc in 1 minute 55 seconds.

Table 48

Macquarie I. (54.5°S, 159.0°E)

July 1954

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	(320)	(2.0)					3.7	(3.1)
01	---	---					2.3	---
02	---	---					2.3	---
03	---	---					2.5	---
04	---	---					1.8	---
05	---	---					1.7	---
06	---	---						---
07	---	---						---
08	240	2.6	---	---	110	1.6	2.0	3.3
09	240	3.4	220	2.6	110	1.8	2.2	3.4
10	240	3.7	220	2.8	100	2.1	2.4	3.5
11	270	3.8	220	3.1	100	2.1	2.5	3.3
12	260	4.0	230	3.2	100	2.1	2.7	3.35
13	250	4.0	220	3.1	100	2.1	2.8	3.5
14	240	4.0	220	3.0	110	2.0		3.4
15	250	3.9	220	(2.7)	110	1.9		3.3
16	230	3.8	210	(2.6)	120	1.8		3.3
17	240	3.0	---	---	---	---		3.1
18	270	2.0						3.15
19	(330)	(1.8)						(3.1)
20	(320)	(2.0)					2.2	(3.0)
21	(300)	(2.0)					2.2	(3.0)
22	---	---					4.1	---
23	---	---					3.8	---

Time: 157.5°E.

Sweep: 1.0 Mc to 13.0 Mc in 1 minute 55 seconds.

Table 49

Macquarie I. (54.5°S, 159.0°E)							
June 1954							
Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs (M3000)F2
00	(320)	(2.0)					3.4 (3.2)
01	(340)	(2.0)					2.9 (3.2)
02	(340)	(2.0)					2.2 (3.1)
03	(300)	(1.8)					2.0 (3.2)
04	---	---					---
05	---	---					---
06	---	---				2.2	---
07	---	---				2.2	---
08	230	2.5	---	---	---	---	3.35
09	230	3.5	230	2.5	100	1.9	2.1 3.55
10	240	3.9	220	2.8	100	2.0	3.5
11	240	4.1	220	3.2	100	2.1	2.4 3.4
12	250	4.3	230	3.2	100	2.1	2.5 3.5
13	250	4.4	230	3.1	100	2.1	2.2 3.5
14	250	4.2	230	3.0	120	2.0	3.4
15	240	4.2	230	3.0	110	1.8	2.2 3.4
16	220	3.8	---	---	(130)	1.6	3.3
17	230	3.2	---	---	---	---	2.1 3.2
18	250	2.1	---	---	---	---	1.8 3.3
19	300	1.8	---	---	---	---	1.8 3.3
20	(350)	(1.8)	---	---	---	---	2.0 (3.2)
21	(300)	(2.0)	---	---	---	---	2.2
22	(300)	(2.0)	---	---	---	---	2.2 (3.0)
23	(300)	(2.0)	---	---	---	---	3.4 3.2

Time: 157.5°E.

Sweep: 1.0 Mc to 13.0 Mc in 1 minute 55 seconds.

Table 50

Macquarie I. (54.5°S, 159.0°E)							
May 1954							
Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs (M3000)F2
00	(340)	(2.1)					4.0 (3.0)
01	(350)	(1.9)					3.2 (3.0)
02	(320)	1.8					2.8 3.1
03	300	1.8					2.6 3.1
04	300	1.8					2.2 3.2
05	300	1.8					2.0 (3.2)
06	(320)	(1.7)					2.1
07	270	2.0	---	---	---	---	2.2 3.3
08	240	3.1	220	(2.3)	100	1.8	2.2 3.5
09	240	3.7	220	2.8	100	2.0	2.1 3.6
10	250	4.0	210	3.0	100	2.1	2.2 3.45
11	250	4.3	220	3.5	100	2.4	2.5 3.4
12	260	4.5	220	3.5	100	2.5	2.5 3.4
13	260	4.5	220	3.4	100	2.4	2.4 3.3
14	250	4.3	220	3.0	100	2.1	2.1 3.3
15	250	4.5	230	3.0	100	2.0	2.0 3.4
16	230	4.1	220	3.0	100	1.5	1.6 3.3
17	240	3.6	---	---	---	---	1.7 3.2
18	250	2.4	---	---	---	---	1.7 3.2
19	280	2.0	---	---	---	---	2.2 3.3
20	300	2.0	---	---	---	---	2.5 3.2
21	320	2.0	---	---	---	---	3.0 3.1
22	320	2.0	---	---	---	---	3.9 (3.2)
23	290	2.0	---	---	---	---	4.0 3.2

Time: 157.5°E.

Sweep: 1.0 Mc to 13.0 Mc in 1 minute 55 seconds.

Table 51

Fribourg, Germany (48.1°N, 7.8°E)							
April 1954							
Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs (M3000)F2
00	<290	3.1					2.87
01	285	3.1					2.88
02	285	3.1					2.92
03	265	2.8					2.97
04	270	2.7					3.03
05	250	3.0					3.14
06	(290)	3.8	240	---	135	1.65	1.8 3.40
07	310	4.2	235	3.50	119	2.15	3.23
08	345	4.5	230	3.75	115	2.50	3.14
09	340	5.0	220	3.95	110	2.75	3.4
10	320	5.0	220	4.10	109	2.90	3.2
11	320	5.1	210	4.15	111	3.05	3.2
12	340	5.3	215	4.20	111	3.10	3.2
13	350	5.1	210	4.15	109	3.05	3.2
14	330	5.2	230	4.10	111	3.00	3.3
15	310	5.4	230	4.00	111	2.85	3.1
16	310	5.2	240	3.75	111	2.65	3.1
17	285	5.4	245	3.50	119	2.25	2.5 3.24
18	275	5.3	250	---	135	1.70	2.1 3.17
19	250	5.8					2.0 3.19
20	240	5.5					2.0 3.20
21	240	4.6					3.21
22	245	3.8					3.11
23	280	3.1					2.96

Time: Local.

Sweep: 1.25 Mc to 20.0 Mc in 10 minutes, automatic operation.

Table 52

Macquarie I. (54.5°S, 159.0°E)							
April 1954							
Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs (M3000)F2
00	---	(2.0)					3.7 (3.1)
01	---	(2.0)					2.7
02	(290)	(2.0)					3.1 (3.2)
03	(300)	1.9					3.0 (3.1)
04	(290)	(1.6)					2.9 (3.1)
05	(330)	(1.4)	---	---	---	---	2.4
06	260	2.2	---	---	---	---	2.4
07	250	3.1	230	2.6	100	1.8	3.45
08	240	3.7	210	3.0	100	2.2	3.4
09	250	4.0	210	3.4	100	2.4	3.3
10	280	4.3	200	3.5	100	2.5	3.2
11	280	4.5	200	3.6	100	2.6	3.3
12	280	4.7	200	3.7	100	2.7	3.3
13	280	5.0	210	3.7	100	2.6	3.3
14	260	4.8	200	3.5	100	2.5	3.4
15	250	4.7	220	3.3	100	2.3	3.4
16	240	4.5	230	3.0	100	2.0	3.4
17	240	4.2	230	2.8	100	1.7	1.7 3.3
18	240	3.8			---	---	2.2 3.25
19	250	3.0			---	---	2.8 3.2
20	240	2.5			---	---	3.2 3.3
21	280	2.0			---	---	4.5 3.2
22	---	(2.4)			---	---	4.6
23	---	---			---	---	4.5

Time: 157.5°E.

Sweep: 1.0 Mc to 13.0 Mc in 1 minute 55 seconds.

Table 53

Fribourg, Germany (48.1°N, 7.8°E)							
March 1954							
Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs (M3000)F2
00	<280	3.0					2.89
01	<280	2.9					2.90
02	275	2.9					2.87
03	265	2.8					2.96
04	260	2.6					3.04
05	<250	2.2					3.20
06	260	2.6					3.11
07	250	3.9	240	---	---	E	1.8 3.39
08	270	4.4	235	3.52	121	1.70	2.0 3.47
09	295	4.9	220	3.78	118	2.55	3.1 3.33
10	290	5.2	215	3.90	113	2.75	3.4 3.40
11	290	5.4	220	4.00	113	2.85	3.1 3.39
12	300	5.4	220	4.10	113	2.95	3.3 3.33
13	295	5.5	220	4.00	115	2.90	2.9 3.34
14	280	5.7	225	3.90	113	2.80	3.36
15	270	5.4	225	3.75	115	2.65	3.38
16	270	5.4	240	3.60	119	2.40	2.8 3.40
17	265	5.4	245	---	127	1.95	2.3 3.33
18	240	5.2			---	1.55	2.1 3.31
19	240	4.8					2.0 3.18
20	245	4.3					1.8 3.15
21	250	3.7					1.8 3.09
22	265	3.2					3.01
23	275	3.0					2.87

Time: Local.

Sweep: 1.25 Mc to 20.0 Mc in 10 minutes, automatic operation.

Table 54

Macquarie I. (54.5°S, 159.0°E)							
March 1954							
Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs (M3000)F2
00	---	---					4.2
01	---	---					4.2
02	(300)	(2.0)					3.1 (3.1)
03	---	---					3.0
04	(290)	(1.9)					2.5 (3.5)
05	(280)	(2.0)					2.5 (3.15)
06	300	2.8	240	3.0	100	1.8	2.2 3.1
07	G	3.5	230	3.5	100	2.2	6
08	400	3.8	220	3.5	100	2.5	2.75
09	380	4.1	220	3.7	100	2.6	2.95
10	380	4.3	200	3.8	100	2.8	3.0
11	380	4.4	200	3.8	100	2.9	3.0
12	370	4.5	210	3.9	100	3.0	3.0
13	360	4.6	200	3.9	100	2.9	3.05
14	340	4.6	210	3.8	100	2.8	3.1
15	300	4.8	220	3.8	100	2.8	3.1
16	280	4.7	220	3.5	100	2.5	3.1
17	270	4.6	230	3.3	100	2.1	3.1
18	250	4.6	250	3.0	100	2.0	2.6 3.1
19	250	4.0	---	---	---	---	4.0 3.1
20	250	3.4					4.4 3.1
21	260	3.0					4.5 3.1
22	(250)	(2.5)					4.7 (3.1)
23	(300)	(2.9)					4.5 (3.1)

Time: 157.5°E.

Sweep: 1.0 Mc to 13.0 Mc in 1 minute 55 seconds.

Table 55

Fribourg, Germany (48.1°N, 7.8°E)								February 1954
Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	<260	3.0						2.97
01	265	3.2						2.98
02	260	3.0						2.97
03	<255	3.0						3.03
04	<260	2.6						3.00
05	<245	2.3						3.13
06	<240	2.0						3.18
07	230	3.3						3.34
08	230	4.5	225	----	129	1.65	2.0	3.54
09	235	4.9	225	----	119	2.20	2.9	3.64
10	250	5.1	222	3.60	117	2.50	2.9	3.50
11	260	5.6	220	3.70	113	2.70	3.1	3.50
12	260	5.7	218	3.75	113	2.76		3.48
13	250	5.3	220	(3.75)	113	2.70		3.55
14	255	5.5	220	3.60	119	2.60		3.47
15	250	5.4	230	----	119	2.35		3.49
16	235	5.2	230	----	125	2.00	2.0	3.47
17	---	4.8	230	----	---	1.55	1.8	3.49
18	225	4.1					<2.0	3.26
19	240	3.6						3.14
20	230	3.6					1.8	3.18
21	252	3.0						3.06
22	260	3.1						3.03
23	260	3.0						3.00

Time: Local.

Sweep: 1.25 Mc to 20.0 Mc in 10 minutes, automatic operation.

Table 56

Macquarie I. (54.5°S, 159.0°E)								February 1954
Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	---	(2.6)					4.4	(3.1)
01	(300)	(2.8)					3.3	(3.05)
02	(280)	(2.4)					3.2	(3.15)
03	(300)	(2.3)					3.0	(3.15)
04	(270)	(2.4)	----	----	----	----	3.0	(3.1)
05	300	3.0	240	3.0	100	2.0	2.4	3.1
06	300	3.4	230	3.3	100	2.2	2.2	3.1
07	420	3.6	220	3.5	100	2.4	2.8	3.1
08	400	4.1	220	3.6	100	2.6	2.8	3.1
09	350	4.5	210	3.7	100	2.9	3.1	3.1
10	350	4.8	200	3.9	100	3.0	3.0	3.1
11	360	4.9	200	4.0	100	3.0	3.0	3.1
12	340	4.8	200	4.0	100	3.0	3.0	3.1
13	330	4.9	200	4.0	100	3.0	3.0	3.1
14	340	4.8	200	3.9	100	3.0	3.0	3.1
15	340	4.7	210	3.9	100	2.9	3.1	3.1
16	340	4.6	200	3.7	100	2.7	2.8	3.1
17	300	4.5	220	3.5	100	2.5	3.0	3.1
18	280	4.6	230	3.1	100	2.1	2.8	3.2
19	250	4.6	250	3.0	100	2.0	3.5	3.2
20	250	4.0	----	----	----	----	3.8	3.1
21	270	3.3					4.3	3.1
22	(270)	3.0					5.0	3.1
23	(280)	(2.6)					4.6	(3.1)

Time: 157.5°E.

Sweep: 1.0 Mc to 13.0 Mc in 1 minute 55 seconds.

Table 57

Fribourg, Germany (48.1°N, 7.8°E)								January 1954
Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	<255	3.2					2.0	3.00
01	250	3.3						3.04
02	<260	3.3					1.6	3.04
03	260	3.2						3.04
04	<245	2.7						3.08
05	230	2.8						3.24
06	230	2.1						3.29
07	225	2.3						3.30
08	220	4.2				(1.50)	2.0	3.62
09	---	5.3	220	----	128	1.95	2.1	3.64
10	230	5.6	230	----	121	2.25	2.5	3.56
11	240	6.0	225	(3.60)	122	2.45	2.5	3.54
12	230	5.8	220	(3.60)	121	2.55	2.6	3.66
13	230	5.5	220	3.60	123	2.50	2.5	3.60
14	235	5.6	225	----	123	2.30		3.57
15	230	5.1	230	----	125	2.05	2.1	3.63
16	---	4.9	220	----	127	1.55	2.0	3.60
17	215	3.9					2.4	3.44
18	230	3.4					2.6	3.29
19	235	3.2					2.1	3.26
20	230	3.0					2.3	3.24
21	255	3.0					2.2	3.00
22	255	3.2					2.0	3.00
23	255	3.2						2.97

Time: Local.

Sweep: 1.25 Mc to 20.0 Mc in 10 minutes, automatic operation.

Table 58

Ojibouti, French Somaliland (11.5°N, 43.1°E)								December 1953
Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	270	(3.9)						(3.26)
01	255	3.9					1.7	(3.24)
02	250	3.6						(3.32)
03	255	3.1						3.44
04	240	2.2						(3.46)
05	270	1.9						3.36
06	---	4.6	240	----	133	1.70	2.8	3.37
07	280	6.6	230	----	111	2.50	3.8	(3.22)
08	315	7.3	220	4.20	110	2.75	4.0	2.96
09	355	7.5	200	4.30	107	3.10	4.7	2.72
10	360	7.4	200	4.35	---	3.30	6.6	2.75
11	350	7.6	200	4.40	---	3.35	6.8	2.79
12	345	7.9	195	4.30	110	3.35	7.0	2.85
13	335	8.4	210	4.30	111	3.25	4.0	2.90
14	320	8.6	215	4.25	115	3.10	5.5	3.00
15	305	8.6	220	4.00	113	2.80	4.0	3.06
16	280	>8.4	235	----	108	2.30	4.0	3.14
17	---	>8.4	240	----	---	1.70	3.5	3.19
18	240	7.8					3.3	3.15
19	250	>7.0					3.0	----
20	275	6.0					2.7	(2.71)
21	300	>5.0					1.9	(2.96)
22	290	>4.4					1.9	(3.22)
23	280	(4.0)					1.9	(3.34)

Time: 35.6°E.

Sweep: 1.25 Mc to 20.0 Mc in 10 minutes, automatic operation.

Table 59

Ojibouti, French Somaliland (11.5°N, 43.1°E)								November 1953
Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	255	>5.0						(3.12)
01	250	>5.0						(3.30)
02	235	4.0						3.48
03	230	3.3						3.44
04	240	2.6						3.45
05	270	2.2						3.24
06	---	5.8	240	----	---	1.90	3.2	(3.40)
07	280	7.4	225	----	109	2.45	3.6	3.21
08	310	8.4	210	4.40	109	2.90	4.0	2.94
09	320	8.2	200	4.40	---	3.20	4.7	2.88
10	340	8.2	200	4.50	---	3.40	4.8	2.78
11	325	>8.5	200	4.50	---	3.40	5.8	2.78
12	330	9.3	200	4.50	---	3.45	4.6	2.82
13	310	9.9	210	4.45	---	(3.35)	4.5	2.89
14	305	>10.0	210	4.30	---	3.10	4.3	2.84
15	300	>10.0	220	----	111	2.80	3.9	2.92
16	(280)	9.8	235	----	---	2.30	4.0	2.98
17	---	>9.0	250	----	---	----	3.7	2.95
18	255	8.1					2.9	2.92
19	270	7.4					2.8	(2.86)
20	290	>6.5					2.0	(2.81)
21	290	6.4						----
22	260	---						----
23	255	5.5						----

Time: 35.6°E.

Sweep: 1.25 Mc to 20.0 Mc in 10 minutes, automatic operation.

Table 60

Djibouti, French Somaliland (11.5°N, 43.1°E)								August 1953
Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	380	2.6						2.60
01	395	(2.6)						----
02	420	1.8						----
03	335	<1.8						----
04	280	<1.8						(3.68)
05	290	2.1						3.05
06	(255)	5.6	240	----	----	2.10	3.4	3.45
07	280	6.6	235	----	----	2.60	4.0	3.30
08	325	7.3	220	4.30	113	3.00	3.8	3.03
09	370	7.8	210	4.40	111	3.20	4.4	2.77
10	370	7.8	210	4.50	109	3.35	5.5	2.58
11	390	7.6	210	4.50	---	3.50	4.5	2.52
12	380	7.7	210	4.50	---	3.45	6.9	2.53
13	380	7.9	215	4.50	109	3.40	6.9	2.62
14	370	8.5	220	4.40	---	3.20	6.7	2.73
15	340	9.0	225	4.20	111	3.10	4.0	2.87
16	320	9.5	225	4.00	---	2.75	4.4	2.90
17	290	9.8	240	----	----	----	4.2	3.06
18	240	9.6					3.6	(3.13)
19	240	8.0					3.2	3.17
20	245	>6.0					<2.3	(3.23)
21	260	>5.0					1.8	3.11
22	275	4.0					<2.0	2.90
23	345	3.5					2.2	2.65

Time: 35.6°E.

Sweep: 1.25 Mc to 20.0 Mc in 10 minutes, automatic operation.

TABLE 61
IONOSPHERIC DATA

foF2, 0.1 Mc, July 1956

75° W Mean Time

Station Washington, DC. Lat. 38.7° N Long. 77.1° W Sweep 1.0 Mc to 25.0 Mc in 13.5 sec. Manual ☐ Automatic ☒

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
01	58	51	50	F	36	39	40	54	58	50	60	62	63	68	68	62	64	71	73	67	67	68	60	58	
02	54	50	49	42	40	43	54	62	66	56	63	57	68	70	70	72	75	74	69	75	72	73	66	64	
03	62	66	55	45	40	39	46	48	50	50	57	56	56	55	56	58	59	59	66	67	62	60	60	56	
04	53	53	48	48	43	48	50	67	65	64	70	66	66	62	67	68	66	66	69	68	70	69	68	67	
05	66	60	54	52	48	50	62	72	72	80	84	80	78	76	78	76	74	76	84	80	77	77	74	64	
06	58	62	56	52	52	50	54	56	68	67	69	74	72	86	78	78	76	72	74	72	73	70	69	64	
07	62	62	56	50	46	49	63	64	64	62	74	78	70	70	72	68	68	68	70	72	72	70	70		
08	70	63	62	54	48	44	52	49	50	48		56	57	58	59	59	61	64	68	70	72	70	71	64	
09	57	58	56	50	44	42	53	56	60	69	70	72	73	76	75	78	78	78	78	76	78	74	72	66	
10	I A	F	F	F	F																U F				
11	61	56	62	57	48	40	57	55	58	67	65	64	64	66	72	73	76	80	85	83	78	84	72	65	
12	61	62	53	34	33	40	51	58	62	59	53	39	60	62	63	64	65	65	68	64	65	66	66	62	
13	62	56	54	53	47	47	57	67	70	76	67	76	72	76	74	74	74	76	77	78	75	80	74	72	
14	72	63	56	49	44	47	58	60	62	62	57	65	64	68	68	72	79	87	82	78	78	76	65	74	
15	58	50	44	42	36	39	47	49	53	49	55	52	55	59	62	62	62	63	64	59	60	67	68	67	
16	58	57	50	47	41	45	52	57	62	70	68	66	68	67	66	68	72	70	70	70	70	70	68	65	
17	68	67	60	57	51	49	58	70	73	72	74	72	76	76	76	74	74	75	78	81	80	76	72	72	
18	70	64	62	60	C	C	C	C	75	77	78	77	76	76	78	78	80	78	80	80	80	72	72	70	
19	64	62	59	56	49	49	56	60	63	63	64	67	68	69	72	70	68	72	69	72	70	68	64	60	
20	58	53	52	49	43	45	60	63	70	68	70	76	76	75	76	77	76	77	80	83	80	78	76	78	
21	70	66	53	49	44	43	52	64	63	70	72	72	72	74	74	74	79	77	78	78	72	67	59	56	
22	55	52	48	46	40	42	50	57	63	62	67	65	68	68	66	68	70	72	70	70	69	68	63	62	
23	61	61	60	48	42	43	60	67	70	77	82	85	80	82	78	78	75	74	76	74	75	72	68	66	
24	67	58	64	53	49	43	53	62	68	68	72	76	76	78	81	84	90	92	90	78	84	70	58	60	
25	49	39	33	30	29	27	39	40	45	44	46	47	47	57	57	58	58	58	60	60	67	68	67	67	
26	63	58	46	43	38	35	37	43	43	43	54	59	63	60	58	57	58	62	65	64	70	68	60	54	
27	47	49	42	34	25	30	34	42	43	45	46	47	48	48	50	54	53	52	53	54	60	62	57	56	
28	53	47	44	35	25	29	39	40	49	49	49	52	55	56	57	56	60	62	64	64	66	64	62	54	
29	55	48	40	38	32	33	42	47	46	55	57	58	55	62	61	65	67	70	72	74	76	70	62	56	
30	53	50	45	41	34	38	48	59	64	70	74	80	88	88	88	82	76	78	75	74	73	69	64	62	
31	60	60	52	43	42	38	50	54	64	70	72	72	73	72	72	76	71	74	75	72	66	66	61		
32	59	54	49	46	44	43	53	53	52	56	56	50	58	57	59	59	58	59	63	67	65	60	59	59	
MED	60	58	53	48	42	43	52	57	63	66	67	66	68	68	70	72	72	72	72	72	72	70	66	64	
NO	31	31	31	31	30	30	30	30	31	31	30	31	31	31	31	31	31	31	31	31	31	31	31	31	

CENTRAL RADIO PROPAGATION LABORATORY, NATIONAL BUREAU OF STANDARDS, BOULDER, COLO.

TABLE 62
IONOSPHERIC DATA

foF2, 0.1 Mc, July 1956

75°W Mean Time

Station: Washington, D.C. Lat. 38.7°N Long. 77.1°W Sweep 1.0 Mc to 25.0 Mc in 13.5 sec. Manual ☐ Automatic ☒

	0030	0130	0230	0330	0430	0530	0630	0730	0830	0930	1030	1130	1230	1330	1430	1530	1630	1730	1830	1930	2030	2130	2230	2300		
01	56	50	F	F	F	I A	52	54	64	62	58	62	66	68	65	60	67	72	66	67	68	64	60	55		
02	52	49	44	40	39	47	58	62	66	67	66	67	70	71	70	75	76	70	70	74	75	72	65	63		
03	66	60	51	44	37	42	48	46	53	54	55	56	54	E G	50	58	58	64	67	68	58	60	66	56		
04	54	52	48	46	45	53	60	68	63	72	69	67	68	64	67	66	64	58	68	68	69	70	68	66		
05	65	58	54	50	47	60	66	68	70	85	76	80	78	76	80	76	76	80	85	80	74	76	70	62		
06	60	59	54	52	51	50	57	60	68	72	76	72	74	80	80	76	74	72	73	73	70	69	66	66		
07	61	58	54	47	46	55	62	64	66	70	78	75	70	70	71	69	67	68	69	73	70	72	68	72		
08	64	F	58	F	F	F	U A	I A	54	55	54	A	A	58	59	59	64	68	70	70	72	70	69	60		
09	58	58	54	45	39	46	53	64	64	68	69	73	76	78	76	78	80	78	75	77	77	74	68	60		
10	I A	F	F	F	F	F	55	56	61	62	66	64	64	68	69	76	78	82	84	86	80	78	70	64		
11	64	58	44	34	35	47	56	60	62	58	59	A	A	63	63	64	66	68	69	65	64	64	64	58		
12	57	55	54	50	45	52	62	71	76	U J	76	72	74	U S	72	75	76	78	79	76	78	U S	74	70		
13	68	58	51	46	44	53	59	61	63	I A	60	66	64	65	68	68	76	86	82	78	80	80	74	75	74	
14	58	47	40	38	37	44	47	45	A	56	55	52	56	59	63	61	63	65	62	61	65	69	68	65		
15	56	54	48	43	40	49	56	61	64	F	68	65	66	68	67	67	72	72	72	71	72	70	70	68	68	
16	68	61	58	54	50	51	63	70	72	70	76	74	76	78	75	74	74	76	78	78	85	75	70	72		
17	68	64	62	C	C	C	C	70	76	79	76	72	77	78	77	79	80	81	82	83	74	72	84	69		
18	65	59	56	55	50	56	58	63	65	64	67	68	67	72	70	68	70	70	72	72	70	66	61	60		
19	55	54	50	46	43	53	64	64	67	72	70	77	74	76	80	77	75	77	80	85	76	80	75	70		
20	71	56	52	46	43	46	59	63	66	71	70	76	73	72	74	78	76	79	76	75	70	60	58	57		
21	55	52	47	42	40	48	53	59	63	64	65	66	68	67	68	70	71	69	69	69	67	64	63	62		
22	63	60	56	44	41	51	62	70	70	84	78	84	85	80	80	75	75	76	77	74	72	70	68	67		
23	60	58	55	50	44	46	U J	65	70	70	75	74	80	82	82	85	92	94	86	81	76	60	60	55		
24	43	36	31	26	22	34	F E G	39	45	E G	E G	E G	E G	47	47	54	57	57	58	59	59	58	63	70	64	
25	60	48	44	39	36	38	E G	37	41	47	52	53	62	60	58	59	56	61	61	64	68	73	60	64	49	
26	48	44	39	30	23	35	F E G	36	44	E G	43	51	47	48	54	53	55	54	53	56	57	62	57	61	56	
27	50	U F	F	F	U F	E G	U F	E G	E G	E G	52	56	58	56	F	58	61	63	64	64	64	60	62	51		
28	50	44	39	35	F	32	40	45	48	E G	54	F	55	62	60	62	62	66	70	70	72	78	70	66	60	54
29	52	50	42	39	33	44	52	64	72	77	74	82	87	88	84	80	78	78	73	76	72	66	60	60		
30	62	56	49	40	38	43	55	63	66	67	70	72	72	72	72	74	76	72	73	76	68	64	64	61		
31	57	53	47	44	44	47	55	53	55	55	55	U S	56	58	59	58	59	61	64	68	60	58	59	59		
MED	60	56	50	44	40	47	56	61	64	67	66	67	68	68	68	72	72	72	72	73	70	69	66	62		
NO	31	31	31	30	30	30	30	31	30	31	31	29	29	31	31	31	31	31	31	31	31	31	31	31	31	

TABLE 63
IONOSPHERIC DATA

foF1, 0.1 Mc, July 1956

75° W Mean Time

Station: Washington, D.C. Lat. 38.7°N Long. 77.1°W Sweep 1.0 Mc to 2.5.0 Mc in 13.5 sec. Manual ☐ Automatic ☒

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
01						A	370	460	480	500	H	H	H	H	H	470	470	440	370	L				
02						Q	L	H	H		H	H	H	H	H	490	470	430	370	L				
03						L	H	H										A	L					
04						Q	L	H	450	470	470	520	580	540	520	520	500	500	470	L	L	L		
05							A	L	L	A	520	540	500	470	500	500	500	470	A					
06							A	440	470	500	520	520	H	H	H	H	H	H	L	L				
07						Q	L	430	490	500	500	580	530	530	520	520	560	480	L	A				
08								420	440	480	I A	U A	480	A	A	500	500	490	470	430	L			
09						Q	L	440	460	520	H	H	H	H	540	520	520	L	L	Q				
10							L	I A	500	500	520	550	530	520	530	520	540	500	U L	L				
11						Q	L	A	U A	H	A	I A			H	H	H	H						
12							L	H	H	U L	H				U H	U H	H	H	L	Q				
13							L	460	540	520	520	560	570	560	560	550	520	500	L	Q				
14							H	490	500	530	530	550	520	520	530	520	500	480	L	L				
15							Q	430	470	490	490	520	520	520	500	500	470	L	L					
16						L	L	L	L	550	550	560	550	550	530	530	530	480	L					
17							C	C	480	520	530	540	550	540	550	540	530	A	A	Q				
18							L	H	H	460	470	520	500	520	530	520	520	470	440	A				
19							380	470	500	510	550	530	540	560	550	520	500	U L	L	L				
20							Q	520	I A	H	510	520	550	520	550	520	530	490	460	L	Q			
21							L	420	470	500	500	540	520	520	520	500	490	450	440					
22							L	430	530	480	540	510	I B	520	530	520	500	490	490	380				
23							L	F	450	450	500	500	520	530	520	500	520	490	450	L				
24							F	390	400	430	440	460	470	470	500	470	460	450	L	Q				
25						Q	F	370	390	H	430	430	480	490	500	520	500	480	460	440	390	L		
26							F	340	390	F	H	410	450	460	H	480	480	470	460	F	H	Q		
27							L	400	440	F	450	490	490	500	500	480	490	460	440	L	Q			
28							L	A	460	F	470	480	490	500	500	500	490	470	450	360				
29							350	430	480	480	540	530	I A	540	550	520	510	490	450	L				
30						Q	L	430	460	480	520	540	520	H	510	530	520	490	L	L				
31							350	420	460	H	490	500	500	H	490	500	500	490	450	L				
MED							370	430	470	500	520	520	520	520	520	500	490	460	380					
NO							10	26	29	30	31	31	30	30	31	31	31	28	12					

CENTRAL RADIO PROPAGATION LABORATORY, NATIONAL BUREAU OF STANDARDS, BOULDER, COLO.

TABLE 64
IONOSPHERIC DATA

foE, 0.1 Mc, July 1956

75°W Mean Time

Station: Washington, D.C. Lat. 38.7°N Long. 77.1°W Sweep 1.0 Mc to 25.0 Mc in 13.5 sec. Manual ☐ Automatic ☒

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
01						A	240	290	320	I A	U A		I A	H		A	A	A	A	A				
02						S	I A	I A	I A	U S			A	A	A		360	330	290	270	180			
03						S	F I A	I A	I A				H				360	330	310	260	A			
04						A	230	280	330	360	380	390	390	390	350	350	340	310	240	190				
05							A	270	280		A	U A	400	400	400	I A	U A	I A	U A	250				
06							U A	U A	U A		350	380	390	380	390	380	350	320	280	190				
07						S	A	H	A	A	A		380	400	390	380	380	350	320	270	A			
08							U A	270	320	350	370	390	380	370	380	370	350	300	A	A				
09						S	A	300	330	350	360	I A	380	400	400	390	A	A	320	270	A			
10							A	H	300	340	370	380	390	390	360	I A	380	390	350	320	270	210		
11						S	H	250	310	350	350	I A	350	A	A	A	A	A	310	A				
12							250	300	330	370		A	A	A	A	U A	360		330	290	U R			
13							220	320		A	350		A	A	A	A	A	350	320	270	220			
14							U A	230	290	330	350	370	A	A	U A	I A	I A	I A	340	320	270	200		
15							H	240	290	350	350	360	A	A	370	390	370	350	310	250	S			
16						S	240	A	A	A	A	U A	I A	U A	I A	I A	360	380	360	340	A			
17							C	C	U A	330	350	370	370	A	A	340	360	350	320	250	S			
18							A	290	310	320		A	A	390	380	390	380	350	320	260	A			
19							230	280	U A	U A	380	400	I A	400	400	370	350	300	260	R				
20							A	A	U A	310	340	A	A	A	A	370	370	330	300	I A	240	170		
21							U A	230	260		A	A	I A	H	A	A	A	A	A	A				
22							250	300	330	370		A	A	B	A	A	A	A	A	A				
23							A	A	A	A		390	A	A	390	U A	I A	340	300	230				
24							A	A	U A	U A		A	A	A	400	390	370	390	320	280	210	H		
25						S	A	A	F	A	A	A	A	A		390	390	370	350	300	260	190		
26							220	270	330	330	330		A	A	390	390	370	350	300	250	190			
27							U C	220	230		A	A	A	A	A	350	U S	330	290	250	S			
28							A	H	300	330		A	A	A	H	H	H	350	320	250				
29							A	270	A	A	A		360	360	360	360	340	280	250					
30						U S	280	H	A	A	A	380	380	380	370	360	340	310	250					
31						150	200	270		U A	I A	H	I A	380	370	360	340	310	250	A				
							A	260	300	340	360	380	380	390	390	370	340	360						
MED							230	280	320	350	360	380	390	390	380	370	350	310	260	190				
NO						1	17	25	23	21	16	17	15	23	27	25	26	29	25	11				

CENTRAL RADIO PROPAGATION LABORATORY, NATIONAL BUREAU OF STANDARDS, BOULDER, COLO.

TABLE 65
IONOSPHERIC DATA

fEs, 0.1 Mc, July 1956

75° W Mean Time

Station: Washington, D.C. Lat. 38.7°N Long. 77.1°W Sweep 1.0 Mc to 25.0 Mc in 13.5 sec. Manual ☐ Automatic ☒

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
01	44 S	23 S	31 E	27 S	37 S	42 S	56	80	110 ^H	94	48	51	50	40	49	64	47 G	44	30 G	20	S	42	55	31 S
02	S	S	S	S			64	43	64	64 ^H	72	39	46	45	44 G	37		36		20	33 H	31	28	S S
03				S	72 H	68 H	48	70	47 H	68	66	50	42	72		42	38	53	58	35	33	40 S		S
04	40	31	15 S	S	37	70	44	45	80	72	103	70	58 G	48	34	40	38	32	39	35	38		33	S
05	24 S	31 S	S		23	46	49	56	56	56	58	40		47 G	46	42	48 G	50 G	54 G	50 G	50	S	S	S
06	S	S		28 S	31 S	42	58	44	47	50	47	66	50		49 G	46 G					46	40	33	24
07			31			29	39	41	49	64	66	70	68				49	51	52	64	45	52	37 S	25 S
08	68 S	49	64	96	54	34	43	44	78	56	80	82	108	86 G	88	56	46	47	50	40	39	16		
09		33	34	29	40	16	35	50	58	52	74	53	45		50	50 G	45 G	33 G	39 G	43 G	58	62	23	34
10	70	86 S	50 S	29 S	29	30	40	49	62	68	54	70	53	52	60						S	S	24	21
11	33			S	41 S	22 S	40 S	52	55	78 ^H	54 ^H	72 ^H	100	82	62	42	45	43	47	74 G	28 S	31	30	47 S
12	60 S	45 S	15 S	S	S			45	36	39	90	50	52	56 H	52	50	48	29 G	39		S	34	37	
13						17	25	39	46	70	120	68	59	50	54	58	37	39		24	S	25	62	54 S
14	80	72	74 S	35 S	51 S	35	26 G	60	49 G	72	68	62	48	54 G	49 G	82 G	39	33	18	28	S	35	25	S
15	29 S	29 S	S	S	S	14 G		37		49	39	50	38				37	41 G	35	18	S	S	S	S
16	S	S	S	S	C	C	C	C	64	50 ^H	77	50	48	42	50		48 G	G	84	80	88	90	70	30
17					S				46	45 ^H	47	47	45	47 G	45 G		G	61 G	84	53	27	33 S	56 S	43 S
18	39 S	35 S	33 S	22 S	S	30 S	39	42	47	54	53	54	40				G		30	60	27	S	S	S
19	S	S	S	S	S	S		33	48	46	47	47	56	35	29 G	43 G		37	62	31	30		S	S
20		S	S	S	S	17	37	44	63	46	48	50 ^H	62	66			70	72	54	38	40	30	S	S
21	S	S	S	S	E	S		33 G	39 G	98	43	43	44	50		45	70	40	45	29	20	S	30	40
22	30	41	17	29	30	76			80	100	39	39		41	47	50 G	33	36	46	60	23 S	37	38	39
23	38	33 S	38	32	45	49	68	49	52	44	44	52	44	90 G	41		35	36 G	30 G	21 G		34	36	50
24	47		33 S	37 S	37 S	40	42	41	44	44 ^H	44 ^H	40	47		42	64	62				62	82	76	45
25	35 S	39		S	S	19	39	38	39 G	80 G	48 G	70	47	41	40 G	62 G	72	70		G	S	S	S	39
26		36	28	30	S	38		G	G		37	36	39	37	39		50	39	35	G	S	S	S	S
27	S	S	S	S	S	S		25	39	48	56	45	38	72	39	44	45 G	115 G	34 G	37 G	22	39	S	37
28	37 S	46 S	30 S	48 S	54	45	42	55	43 H	80	72 H	60	45	39	34	41				56	30 S	39 S	S	S
29				S	44 S	15 G	31	39	46	50	70	44	104	93	55	78	60 G	42	28	20				25
30	24	24 F	29				39	38	47	45	105	43	48	59	41	39		34	43	38	50 H	40	24	42
31	36	30	31	31	21	27	35	43	47	65	67	45	49	65	57	70	74	40	76	54	53	24	50	33
MED NO	38	35	31	30	37	30	39	44	48	56	54	50	48	45	45	42	40	37	37	31	39	35	36	38
	17	17	17	13	17	25	29	30	31	31	31	31	31	31	31	31	31	31	31	31	20	21	18	18

CENTRAL RADIO PROPAGATION LABORATORY, NATIONAL BUREAU OF STANDARDS, BOULDER, COLO.

TABLE 66
IONOSPHERIC DATA

f min, 0.1 Mc, July 1956

75° W Meon Time

Station: Washington, D.C. Lat. 38.7°N Long. 77.1°W Sweep 1.0 Mc to 25.0 Mc in 13.5 sec. Manual ☐ Automatic ☒

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
01	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	20	20	20	18	17	17	E S	E S	E S	E S	E S
02	15	13	13	13	13	13	13	16	16	16	16	16	16	18	19	19	17	19	17	E S	E S	E S	E S	E S
03	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S
04	16	13	13	13	13	15	16	16	16	16	16	16	16	18	16	17	20	22	22	16	16	16	16	16
05	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S
06	16	16	13	13	12	15	16	16	16	16	16	16	16	17	16	20	20	23	19	18	16	16	16	16
07	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S
08	16	16	13	13	13	15	16	16	16	16	16	16	16	17	17	16	19	20	20	18	21	16	13	15
09	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S
10	16	12	12	12	12	11	12	16	17	17	21	24	26	27	20	16	19	16	16	15	E S	E S	E S	E S
11	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S
12	17	13	11	E	E	E	E	E	E	E	16	16	17	17	19	19	20	16	16	17	16	16	16	16
13	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S
14	15	13	12	13	13	13	16	16	17	16	16	16	16	20	16	25	17	19	20	16	13	16	16	16
15	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S
16	17	16	16	16	16	19	16	16	16	16	16	17	17	17	18	21	21	20	20	18	25	16	16	16
17	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S
18	16	16	12	14	16	17	16	17	18	18	18	20	22	21	22	E S	E S	E S	E S	E S	E S	E S	E S	E S
19	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S
20	16	16	14	11	13	13	16	16	16	16	16	16	16	17	16	18	20	21	16	21	16	20	16	16
21	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S
22	12	16	13	14	11	15	16	16	16	18	16	18	19	19	21	18	17	16	16	16	16	16	16	16
23	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S
24	16	15	13	13	13	12	13	16	16	16	16	16	16	18	21	21	19	21	16	23	16	16	16	16
25	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S
26	14	14	16	16	12	16	16	16	16	16	16	17	20	20	21	21	19	21	20	16	16	13	16	16
27	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S
28	16	11	16	13	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
29	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S
30	16	16	16	14	12	16	16	16	16	16	16	16	16	21	21	23	16	18	16	16	16	16	16	16
31	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S
32	16	16	16	12	16	15	16	16	16	16	16	16	16	18	20	20	20	20	16	16	16	16	16	16
33	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S
34	16	16	13	13	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
35	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S
36	16	16	16	14	11	13	13	16	16	16	16	16	16	17	16	18	20	21	16	21	16	20	16	16
37	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S
38	16	16	16	14	11	13	13	16	16	16	16	16	16	17	16	18	20	21	16	21	16	20	16	16
39	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S
40	16	16	16	14	11	13	13	16	16	16	16	16	16	17	16	18	20	21	16	21	16	20	16	16
41	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S
42	16	16	16	14	11	13	13	16	16	16	16	16	16	17	16	18	20	21	16	21	16	20	16	16
43	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S
44	16	16	16	14	11	13	13	16	16	16	16	16	16	17	16	18	20	21	16	21	16	20	16	16
45	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S
46	16	16	16	14	11	13	13	16	16	16	16	16	16	17	16	18	20	21	16	21	16	20	16	16
47	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S
48	16	16	16	14	11	13	13	16	16	16	16	16	16	17	16	18	20	21	16	21	16	20	16	16
49	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S
50	16	16	16	14	11	13	13	16	16	16	16	16	16	17	16	18	20	21	16	21	16	20	16	16
51	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S
52	16	16	16	14	11	13	13	16	16	16	16	16	16	17	16	18	20	21	16	21	16	20	16	16
53	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S
54	16	16	16	14	11	13	13	16	16	16	16	16	16	17	16	18	20	21	16	21	16	20	16	16
55	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S
56	16	16	16	14	11	13	13	16	16	16	16	16	16	17	16	18	20	21	16	21	16	20	16	16
57	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S
58	16	16	16	14	11	13	13	16	16	16	16	16	16	17	16	18	20	21	16	21	16	20	16	16
59	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S
60	16	16	16	14	11	13	13	16	16	16	16	16	16	17	16	18	20	21	16	21	16	20	16	16
61	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S
62	16	16	16	14	11	13	13	16	16	16	16	16	16	17	16	18	20	21	16	21	16	20	16	16
63	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S
64	16	16	16	14	11	13	13	16	16	16	16	16	16	17	16	18	20	21	16	21	16	20	16	16
65	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S
66	16	16	16	14	11	13	13	16	16	16	16	16	16	17	16	18	20	21	16	21	16	20	16	16
67	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S
68	16	16	16	14	11	13	13	16	16	16	16	16	16	17	16	18	20	21	16	21	16	20	16	16
69	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S
70	16	16	16	14	11	13	13	16	16	16	16	16	16	17	16	18	20	21	16	21	16	20	16	16
71	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S	E S
72	16	16	16	14	11	13	13	16	16	16	16	16	16	17	16	1								

TABLE 67
IONOSPHERIC DATA

h' F2, Km, July 1956

75° W Mean Time

Station Washington, D.C. Lat. 38.7°N Long. 77.1°W Sweep I.O Mc to 25.0 Mc in 13.5 sec. Manual ☐ Automatic ☒

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
01	290	260	280	280	320	360	330	L	420	440	380	430	430	380	410	380	370	330	300	270	250	270	310	270
02	250	270	250	300	320	280	320	290	330	320	380	360	460	380	380	370	310	310	300	280	250	260	250	300
03	300	260	270	250	270	390	440	540	550		450	440	450	510	520	440	400	390	320	280	250	260	270	260
04	290	300	270	300	260	270	270	310	320	370	330	500	400	400	420	380	380	360	290	260	260	250	270	270
05	260	250	270	260	260	250	250	270	310	370	320	330	300	320	260	340	360	340	290	260	240	260	250	240
06	280	275	260	290	300	300		420	460	340	400	320	480	380	340	360	340	330		260	260	250	270	260
07	250	260	250	250	250	260	280	310	410	390	360	420	400	420	410	370	410	360	330	280	250	260	270	300
08	270	300	280	260	300	340	380	450	620		G	A	600	520	510	500	500	440	410	330	280	250	270	270
09	300	310	270	280	270	300		410	320	370	380	450	400	420	410	380	360	320		260	250	280	260	250
10		360	300	250	270	280	270	L	340	380	380	560	510	470	440	430	400	370		270	210	260	260	270
11	290	250	230	260	330	290		340	390	380	520	530	540	530	530	490	460	400	330	280	260	270	280	300
12	300	330	290	270	290	290	270	350	360	340	300	390	400	410	400	410	380	350	310	250	260	270	280	270
13	260	250	270	270	280	280	270	370	420		L	L	520	530	510	490	510	420	340	290	250	260	290	290
14	280	270	290	320	290	280	350	510	530		G		610	680	530	510	450	490	420		270	260	290	260
15	260	280	260	260	270	290	240	390	410	350	400	470	430	440	500	470	390		290	270	270	260	290	290
16	280	260	290	260	280	280		330	300	370	370	420	380	410	280	360	350	340		270	280	290	280	280
17	280	280	300	270		C	C	C		280	320	340	330	400	380	400	380	360	360	280	250	240	260	270
18	260	270	260	270	260	280	290	L	350	410	420	430	430	420	390	410	420	350	330	270	250	250	270	280
19	270	300	290	300	290	290	320	350	310	350	400	400	390	410	400	350	340	320	280	280	240	260	250	280
20	270	250	260	270	270	280	230	350	290	350	330	380	340	370	280	380	320	310	290	250	230	230	260	280
21	270	280	270	280	270	270		350	320	370	370	450	410	390	420	390	360	310	310	270	240	250	280	290
22	290	300	250	240	270	280	280	300	350	300	320	350	330	350	340	330	340	340	290	250	250	280	280	300
23	290	250	280	290	280	270		350	300	340	390	370	410	380	370	370	350	290	290	240	240	250	290	290
24	280	280	310	350	400	350		G	G	G	G	G	G		470	460	410	410	340	320	270	290	270	290
25	270	270	290	300	310	310		600		G	G	G	G	400	430	420	420	380	330	270	260	220	290	250
26	290	260	260	250	330	320		640	730		G	G	G	630	510	460	430	380	260	280	270	270	270	270
27	260	280	290	270	350	310	340		400	650		700	540	470	450	500	380	350	310	250	240	260	290	260
28	290	270	260	300	310	310		460		480	370	500	370	440	410	410	390	320	310	290	240	240	250	250
29	270	280	300	300	290	290	330	280	310	280	340	350	340	340	310	310	320	290	260	250	250	250	280	290
30	270	260	250	270	300	270		360	280	280	340	370	350	410	380	370	340	300	300	260	240	260	280	270
31	270	250	250	290	300	300	310	310	360	430	720		600	520	510	420	400	380	320	280	250	260	330	290
MED	275	270	270	270	290	290	315	350	360	370	380	430	410	410	410	390	380	340	305	270	250	260	270	270
NO	30	31	31	31	30	30	22	27	31	30	29	31	31	31	31	31	31	30	26	31	31	31	31	31

CENTRAL RADIO PROPAGATION LABORATORY, NATIONAL BUREAU OF STANDARDS, BOULDER, COLO.

TABLE 68
IONOSPHERIC DATA

h'F1, Km, July 1956

75° W Mean Time

Station: Washington, D.C. Lat. 38.7° N Long. 77.1° W Sweep 1.0 Mc to 25.0 Mc in 13.5 sec. Manual ☐ Automatic ☒

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
01						A	U A	I A	U A	U A	H	H	H	H	H	200	205	230	240	260				
						Q	260	240	220	220	200	180	190	205	240			H	H					
02							235	210	200	190	200	200	190	200	210	215	215	205	230	250				
							H	H		U A		H	H				H	U A	I A					
03						305	220	230	230	200	210	190	200	230	210	190	215	240	245	250				
						Q			H			H	H	H	H			H						
04							240	230	210	220	260	220	190	180	190	215	225	205	235	250	295			
							A		I A										A					
05							230	200	210	220	210	200	190	210	220	210	270							
							A				H	H	H	H	H			H						
06							240	220	220	210	200	200	200	190	200	220	220	235	250					
						Q					H	H				H	H	H	A	A				
07							260	245	220	200	190	180	210	200	210	205	210	200						
								U A	I A	U A	A	A		A	A			U A	U A	U A				
08							220	220	220							210	220	280	240	270				
						Q		A	A							H	H	H		Q				
09							250	235			205	210	200	205	210	220	220	225	240					
							U A	U A	I A	I A	H						H	H	H					
10							255	250	240	230	215	200	240	200	200	220	220	220	240	260				
						Q		I A	U A	I A	H	U A	I A		H				A					
11							250	235	210	205	200	205	215	225	220	210	205	230						
								H			U A						U A	U A	U H	Q				
12							240	220	230	220	210	200	220	210	210	200	210	210	230					
											A	A								Q				
13							240	240	215	210			200	210	I A	215	220	220	215	235				
							H					H	H	U A			H							
14							230	210	250	220	200	170	170	220	190	220	205	225	240	250				
							Q					H	H											
15							220	220	210	200	200	220	200	210	210	210	220	225	220	245				
							H	U A		H			H	H	H		H	H	U A					
16						250	250	235	240	210	200	210	200	180	230	220	250	230	260					
							C	C	A										A	Q				
17									230	205	180	190	190	200	215	210								
								H			H			H	H	H								
18							U A	H	H	U A	210	200	220	200	210	210	220	220	240	A				
								U A					U A	H										
19							240	245	200	200	190	200	200	200	230	200	210	230	230	250				
							Q		I A			H			H	H				Q				
20							240	225	210	200	200	200	210	190	200	230	250	230						
												H												
21							230	220	220	200	200	205	190	220	220	220	225	240	220					
											H	I B	H	H	H	H	H	H						
22							250	230	225	205	200	180	185	190	200	205	205	225	240					
									H	H	U A		H											
23							250	220	230	205	190	240	190	210	220	210	230	230	230					
									H					H		I A				Q				
24							270	240	215	190	200	200	215	210	220	220	220	230	240					
						Q		H				H				U A	I A							
25							240	230	210	190	200	210	225	230	230	230	240	250	260	260				
									H	H	H	H	H	H	H	H	U A	F	H		Q			
26							280	225	230	210	190	215	200	230	200	200	215	210	230					
											H					H				Q				
27							250	225	210	200	200	210	205	225	205	190	230	220	240					
								I A	H	H	H	U A	H	H				H						
28							240	220	200	205	200	210	210	200	190	220	210	230	220					
												I A												
29							250	220	190	190	205	210	210	210	210	220	220	210	230					
						Q						H	H				H							
30							240	220	220	205	210	205	205	180	200	210	210	240	260					
								U A		H	I A		H		U A				A					
31							240	220	220	220	210	200	250	200	240	220	220	225						
MED							240	230	220	210	200	200	200	200	210	210	220	225	240	250				
NO						2	25	30	29	30	29	29	30	30	30	31	31	30	26	11	1			

CENTRAL RADIO PROPAGATION LABORATORY, NATIONAL BUREAU OF STANDARDS, BOULDER, COLO.

TABLE 69
IONOSPHERIC DATA

h'E, Km, July 1956

75° W Mean Time

Station: Washington, D.C. Lat. 38.7° N Long. 77.1° W Sweep 1.0 Mc to 25.0 Mc in 13.5 sec. Manual ☐ Automatic ☒

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
01						A	109	109	107	103	107	101	101	105	101	105	109	I A	109	119					
02						S	109	109	105	103	101	101	U A	103	101	103	105	109	111	130					
03						S	105	U A	U A	I A	101	101	H	101	103	109	109	109	115	A					
04						A	115	105	105	101	105	U A	101	A	A	101	109	109	H	109	121				
05							109	107	105	105	105	105	101	105	109	105	105	111	115						
06							U A	121	115	105	105	105	105	107	103	103	105	H	111	121					
07						S	111	109	105	103	101	101	101	101	105	109	105	111	115	A					
08								109	109	105	109	111	111	111	109	109	109	111	111	A					
09						S	117	111	111	107	109	107	109	105	107	109	109	109	113	A					
10							111	111	105	105	109	H	105	109	105	109	109	109	109	125					
11						S	115	109	109	101	101	101	101	101	101	101	101	107	119						
12							109	109	109	105	101	101	U A	101	101	101	101	U A	115	123					
13							117	111	105	105	103	101	101	101	A	A	105	109	119	121					
14							119	115	111	101	107	101	101	101	109	A	109	119	119	129					
15							115	111	109	101	109	U A	103	105	101	105	101	111	101	111	S				
16						S	119	109	109	101	109	109	109	109	109	109	111	109	119						
17							C	C	109	109	105	109	U A	U A	105	101	105	109	109	109	S				
18							107	109	109	109	103	109	109	101	101	101	101	101	109	A					
19							111	109	101	101	U A	U A	I A	U A	U A	109	101	101	101	105	113				
20							115	101	103	101	101	101	A	A	101	101	101	103	111	127					
21							109	109	101	101	101	101	I A	101	101	101	101	101	115						
22							119	109	109	105	101	105	I B	105	105	105	105	A	A	A					
23							111	A	U A	101	103	101	101	101	101	109	103	103	119						
24							A	U A	109	105	101	101	109	109	109	105	109	102	111	109	119				
25						S	A	A	101	101	101	101	101	101	101	109	109	109	115	129					
26							111	109	109	109	103	H	U A	A	109	101	101	101	111	103	121				
27							U C	117	109	101	101	A	A	U A	101	101	101	103	101	109	115	S			
28							119	111	109	109	107	101	101	101	U A	U A	U A	101	119	111					
29							U A	119	111	105	109	U A	101	101	101	101	103	105	115	119					
30						U S	129	119	109	107	105	105	H	109	A	A	U A	109	111	111					
31							121	109	103	101	101	101	101	101	105	109	105	109	117						
MED							115	109	105	103	103	101	101	102	102	105	105	109	112	123					
NO						1	27	28	31	31	30	29	29	28	28	29	30	30	30	13					

CENTRAL RADIO PROPAGATION LABORATORY, NATIONAL BUREAU OF STANDARDS, BOULDER, COLO.

TABLE 70
IONOSPHERIC DATA

(M3000)F2, July 1956

75°W Mean Time

 Station: Washington, D.C. Lat. 38.7°N Long. 77.1°W Sweep 1.0 Mc to 25.0 Mc in 13.5 sec. Manual ☐ Automatic ☒

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
01	280	275	280	280	260	270	290	260	270	270	290	270	270	280	280	285	280	285	290	290	280	280	280	280
02	280	280	290	265	260	270	300	330	310	310	290	300	250	280	280	280	300	300	290	285	280	275	275	265
03	270	290	280	280	270	265	260		240		270	280	275	255	250	270	280	280	290	310	300	290	290	280
04	275	270	280	270	280	300	310	300	315	290	300	260	265	290	275	280	290	280	290	295	290	275	290	285
05	285	280	280	290	280	310	340	320	300	280	310	295	275	280	290	290	280	290	290	300	300	285	290	285
06	260	280	280	275	275	290	280	260	290	300	270	290	250	280	290	270	285	290	290	300	290	275	280	280
07	280	285	290	310	280	300	330	290	265	280	280	260	275	270	270	280	270	275	290	285	290	275	270	270
08	290	255	260	270	280	290	280	270	230			230	260		255	250	265	270	280	290	285	275	265	280
09	245	260	275	280	275	290	290	280	310	280	280	260	275	265	265	270	280	285	285	280	300	290	280	280
10		270	280	290	280	300	310	250	310	285	290	235	250	255	255	260	270	280	280	295	270	280	275	265
11	260	290	300	280	270	290	300	290	280	300	250		245	245	240	255	255	270	280	270	275	260	270	265
12	275	260	260	270	270	290	300	285	270	295	315	290	290	280	280	275	275	290	295	290	280	280	280	290
13	290	290	285	295	280	300	300	295	280	260	270	245	245	240	245	235	255	275	290	300	270	260	285	270
14	270	290	270	270	290	300	300	255	250		230		220	245	250	270	250	265	280	280	270	270	275	280
15	280	275	280	280	280	300	300	280	270	300	285	260	265	270	250	250	270	270	295	280	275	270	270	260
16	270	280	265	270	280	290	280	300	310	285	280	270	280	270	280	275	280	285	280	290	290	290	290	280
17	275	270	270	290					320	300	300	310	270	280	275	275	280	280	285	280	300	290	280	290
18	275	280	280	285	285	295	300	290	280	275	270	260	270	265	275	260	260	280	290	300	290	280	270	265
19	270	260	260	265	265	250	305	285	320	280	280	275	280	270	275	290	290	290	295	290	310	280	285	280
20	290	300	280	290	285	305	295	300	295	295	310	280	280	290	275	275	290	285	290	300	300	285	275	275
21	280	280	280	285	280	300	310	290	310	295	290	260	270	280	270	275	280	300	285	300	285	280	270	270
22	275	285	300	300	280	290	330	310	300	310	295	280	290	270	285	295	280	290	300	290	295	275	275	260
23	285	285	270	275	290	290	310	270	290	290	275	270	270	290	275	265	270	290	295	300	290	300	275	290
24	300	270	260	250	260	300		220						260	265	280	280	290	290	290	285	290	270	265
25	285	285	270	270	270	275		235			270	280	290	280	280	275	270	270	290	290	290	290	270	285
26	270	300	280	280	250	290		230	210						230	260	260	270	280	290	270	280	265	275
27	285	280	280	280	265	290	320		300	220		220	250	270	270	260	280	295	290	300	285	285	280	300
28	280	300	290	280	290	300	310	270		265	300	250	290	270	280	270	280	290	290	280	300	280	290	280
29	280	275	280	265	280	270	300	315	320	330	300	290	290	290	300	300	285	300	295	290	290	280	275	270
30	275	295	295	280	275	300	300	285	290	330	300	290	270	280	280	270	280	290	300	300	280	270	270	280
31	275	280	280	270	265	290	310	305	310	265	215		235	250	250	275	285	280	280	290	290	270	270	270
MED	280	280	280	280	280	290	300	285	290	280	280	265	270	270	275	275	280	285	290	290	290	280	275	280
NO	30	31	31	31	30	30	30	29	31	31	30	30	31	30	31	31	31	31	31	31	31	31	31	31

CENTRAL RADIO PROPAGATION LABORATORY, NATIONAL BUREAU OF STANDARDS, BOULDER, COLO.

TABLE 71
IONOSPHERIC DATA

(M3000) F1, July 1956

75°W Mean Time

Station: Washington, D.C. Lat. 38.7°N Long. 77.1°W Sweep 1.0 Mc to 25.0 Mc in 13.5 sec.

Manual ☐ Automatic ☒

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
01						A	340	U A	370	370	H	H	H	H	H	390	360	370	380	L				
02						Q	L	H	H	370	370	430	390	380	360	360	370	H	H	L				
03						L	H	H	360	380	360	390	400	380	380	380	370	360	A	L				
04						Q	L	H	360	360	390	340	345	360	380	350	370	350	350	L	L	L		
05							A	L	L	A	370	380	400	420	380	360	360	350	U A	A				
06							A	U A	340	360	360	370	366	380	370	370	340	350	340	L	L			
07						Q	L	370	350	370	380	350	380	380	370	360	315	340	A	A				
08							380	A	A	A	A	A	A	A	350	370	370	340	330	L				
09						Q	L	340	A	350	360	370	370	350	360	370	350	L	L	Q				
10							L	330	A	360	360	365	370	390	360	360	330	340	U H	L				
11						Q	L	A	370	380	380	400	A	A	390	390	370	360	340	A				
12							L	H	360	360	350	380	360	380	360	380	360	350	350	L	Q			
13							L	340	365	350	A	A	390	380	365	360	350	350	L	Q				
14							320	390	360	390	410	400	H	H	380	380	370	350	350	L	L			
15							Q	350	360	380	380	380	380	390	360	350	370	360	400	L				
16						L	L	L	L	360	360	360	360	360	370	350	350	360	L					
17							C	C	350	340	370	380	380	360	360	340	330	A	A	Q				
18							L	H	330	360	350	390	380	380	370	370	360	340	340	340	A			
19							340	330	340	360	350	360	370	360	350	350	380	340	L	L				
20							Q	330	A	350	380	370	380	360	370	340	360	340	L	Q				
21							L	380	360	370	390	370	380	370	360	360	350	350	360					
22							L	370	350	390	360	400	B	400	390	370	370	340	360					
23							L	F	370	380	370	390	350	370	370	345	360	350	L					
24							F	310	350	380	400	420	400	390	375	370	A	370	345	L	Q			
25						Q	330	H	340	390	420	370	370	360	345	365	370	A	340	340	L			
26							F	F	330	370	380	380	390	380	420	390	400	380	360	330	Q			
27							340	370	380	390	380	380	380	380	390	380	360	350	L	Q				
28							L	A	F	F	H	370	380	380	400	370	400	370	360	340	370			
29							350	345	360	380	360	370	A	350	360	360	360	350	L					
30						Q	L	355	370	365	370	370	370	380	360	350	350	L	L					
31							350	360	360	360	370	380	380	390	365	370	350	350	L					
MED							335	360	360	370	370	380	380	380	370	360	360	350	360					
NO							10	26	25	29	29	29	27	30	31	30	30	28	11					

CENTRAL RADIO PROPAGATION LABORATORY, NATIONAL BUREAU OF STANDARDS, BOULDER, COLO.

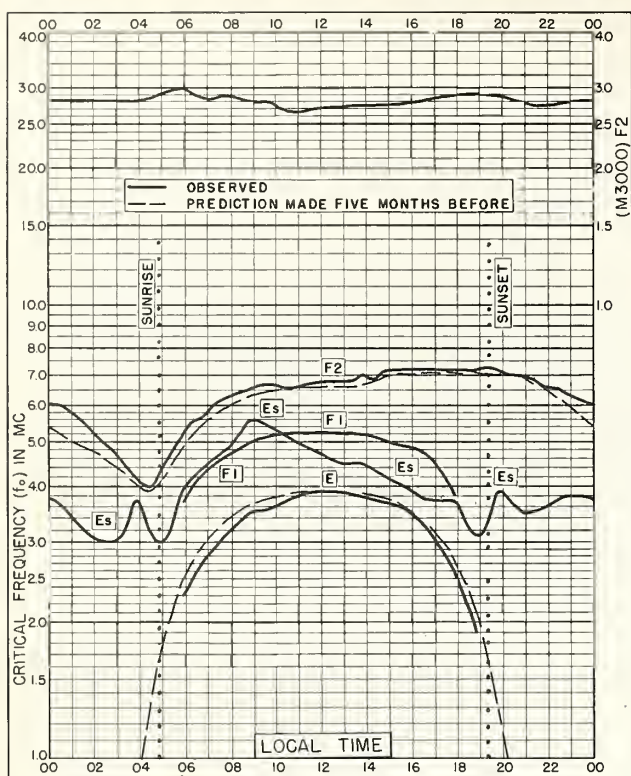


Fig. 1. WASHINGTON, D. C.
38.7°N, 77.1°W

JULY 1956

NBS 503

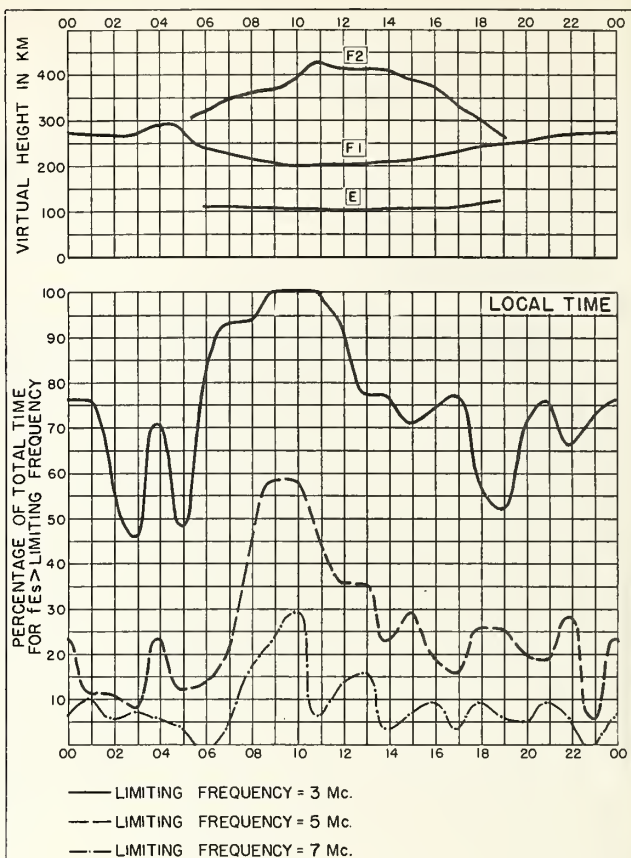


Fig. 2. WASHINGTON, D. C.

JULY 1956

NBS 490

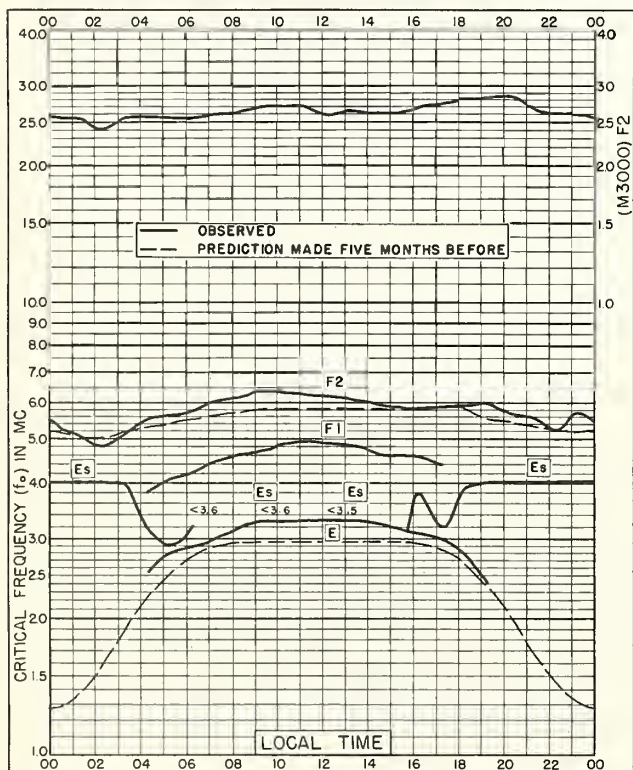


Fig. 3. TROMSØ, NORWAY
69.7°N, 19.0°E

JUNE 1956

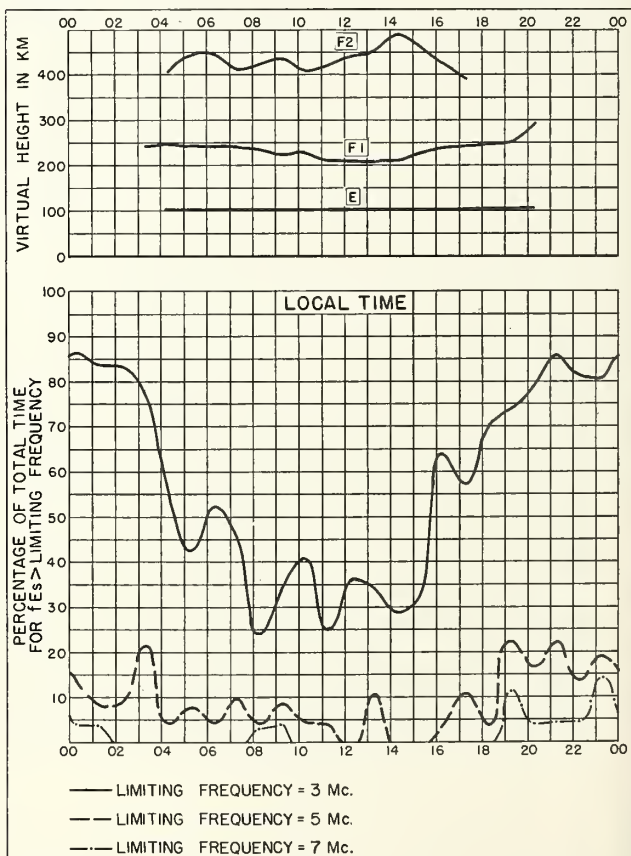


Fig. 4. TROMSØ, NORWAY

JUNE 1956

NBS 490

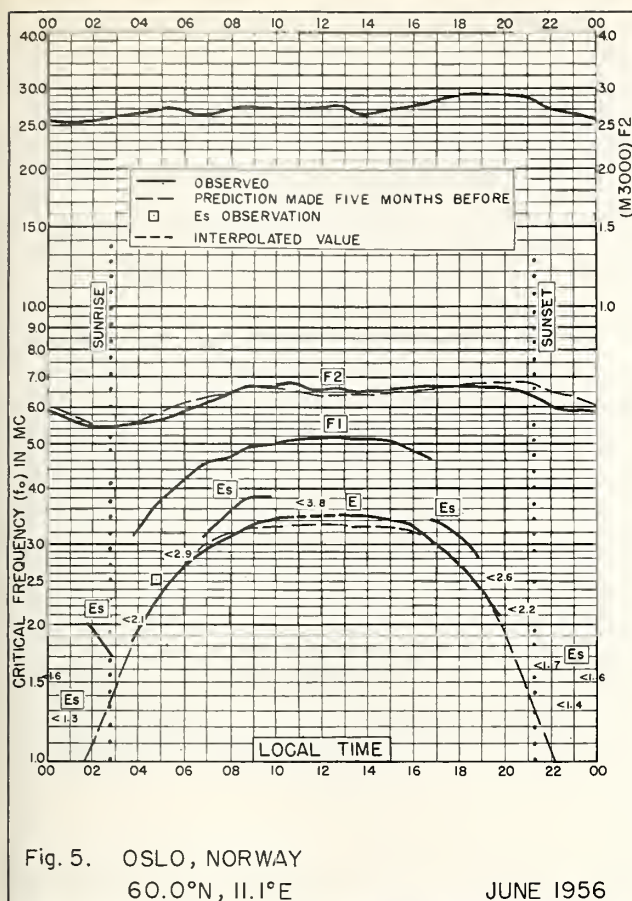


Fig. 5. OSLO, NORWAY
60.0°N, 11.1°E

JUNE 1956

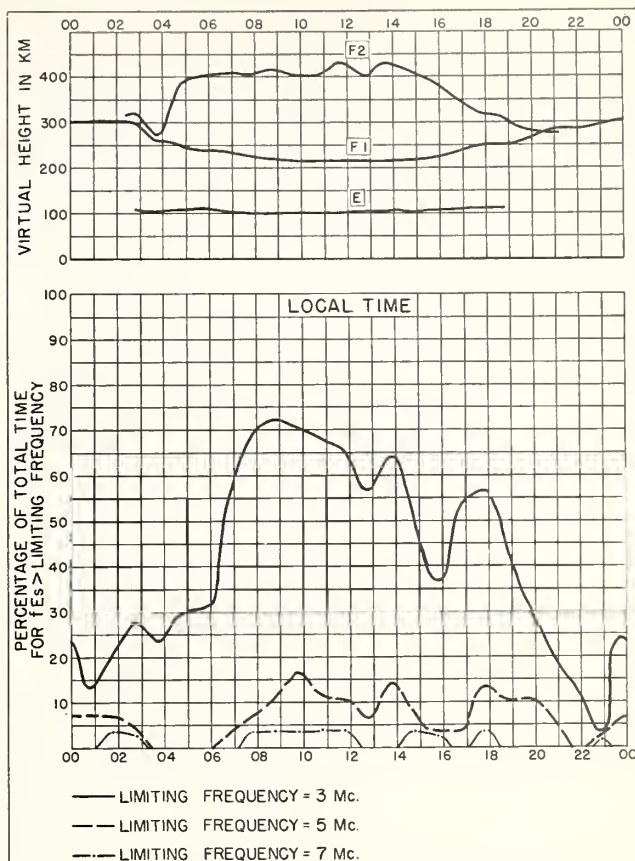


Fig. 6. OSLO, NORWAY

JUNE 1956

NBS 490

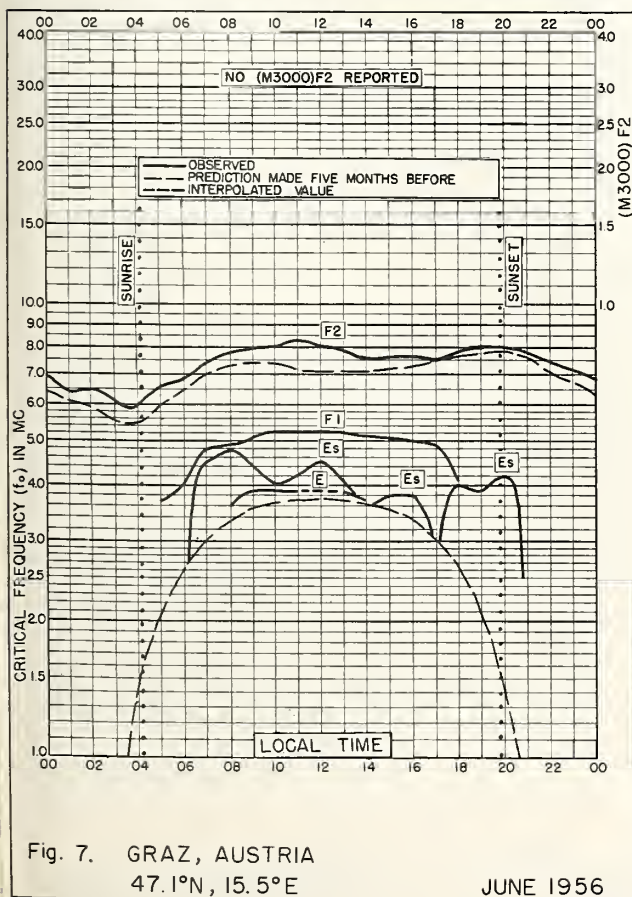


Fig. 7. GRAZ, AUSTRIA
47.1°N, 15.5°E

JUNE 1956

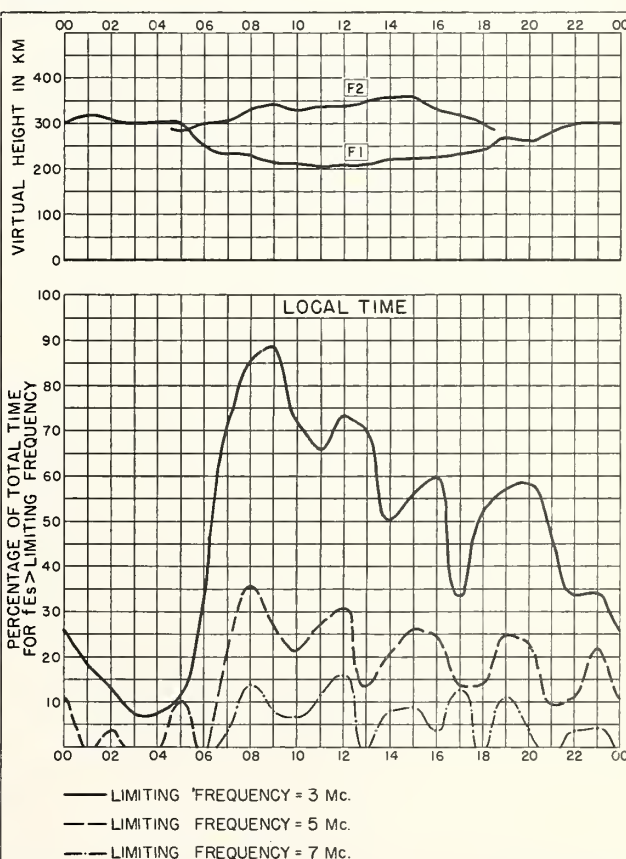


Fig. 8. GRAZ, AUSTRIA

JUNE 1956

NBS 490

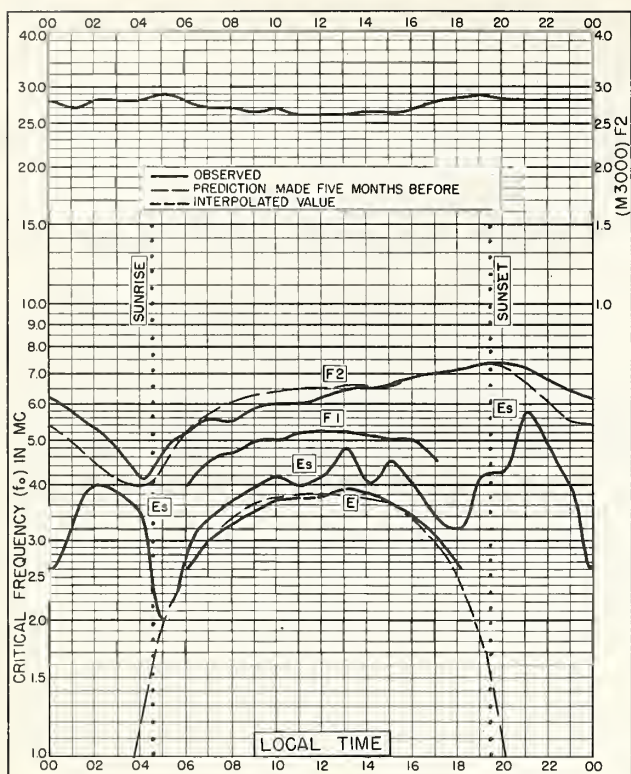


Fig. 9. FT. MONMOUTH, NEW JERSEY
40.3°N, 74.1°W
JUNE 1956

NBS 503

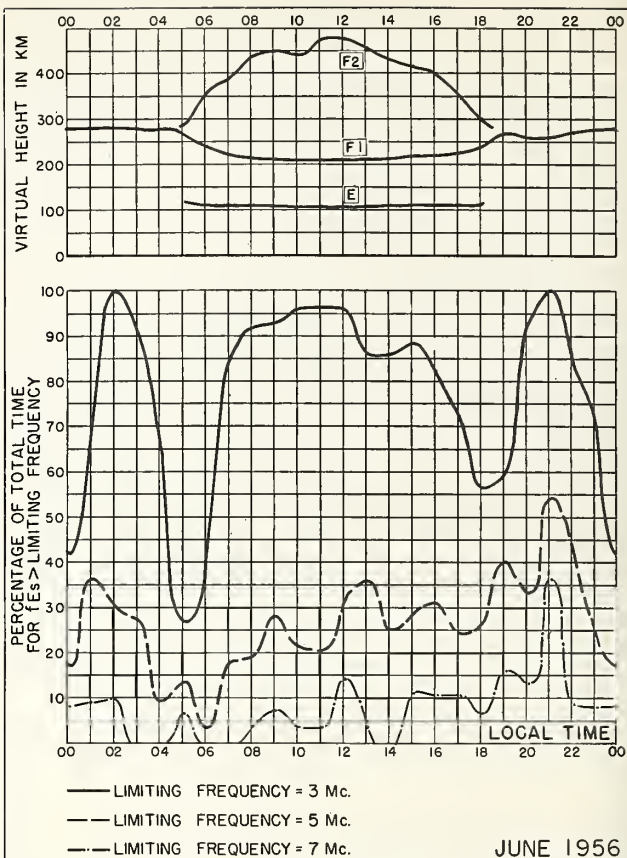


Fig. 10. FT. MONMOUTH, NEW JERSEY

JUNE 1956

NBS 490

NBS 490

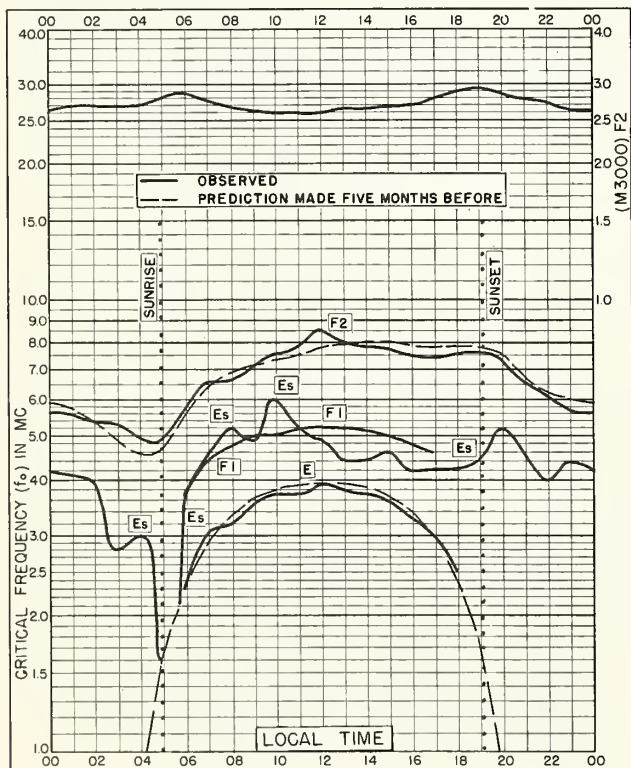


Fig. 11. WHITE SANDS, NEW MEXICO
32.3°N, 106.5°W
JUNE 1956

NBS 503

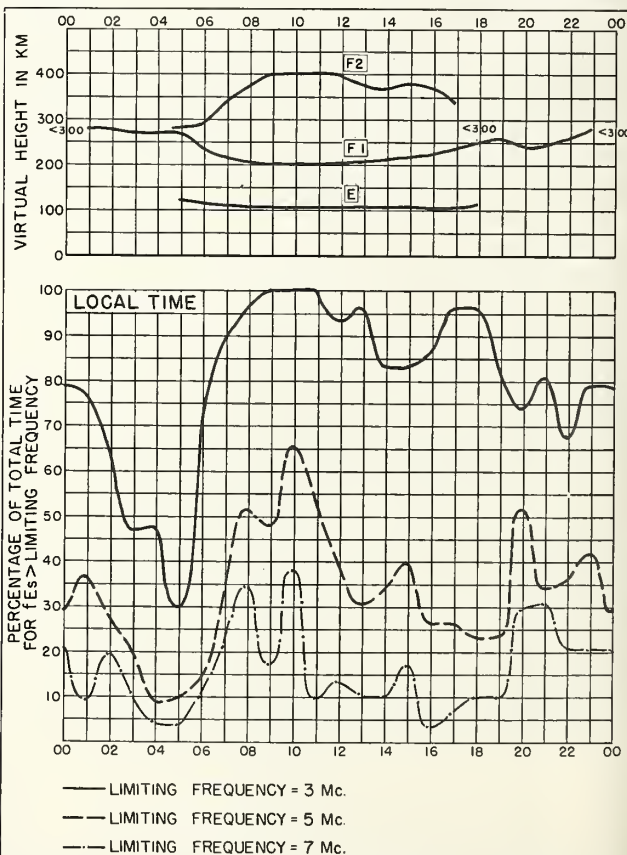


Fig. 12. WHITE SANDS, NEW MEXICO
JUNE 1956

NBS 490

NBS 490

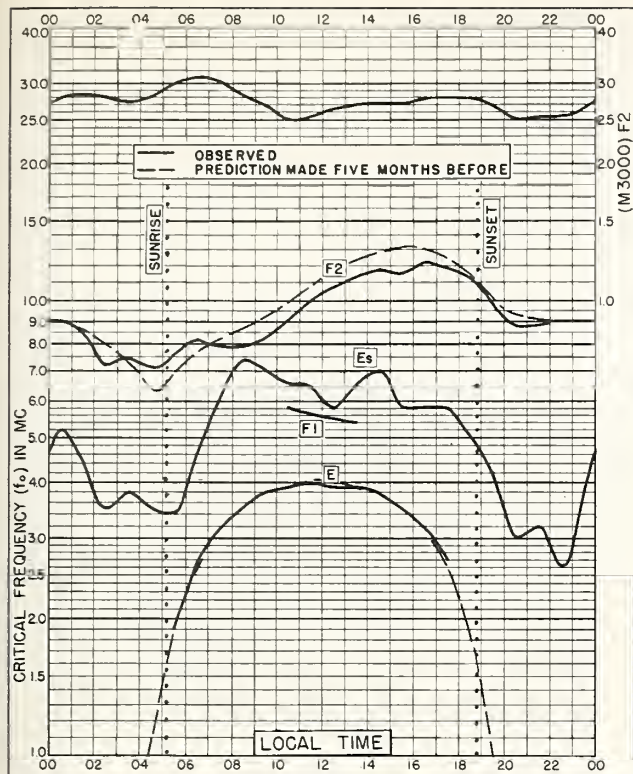


Fig. 13. OKINAWA I.
26.3°N, 127.8°E

JUNE 1956

NBS 503

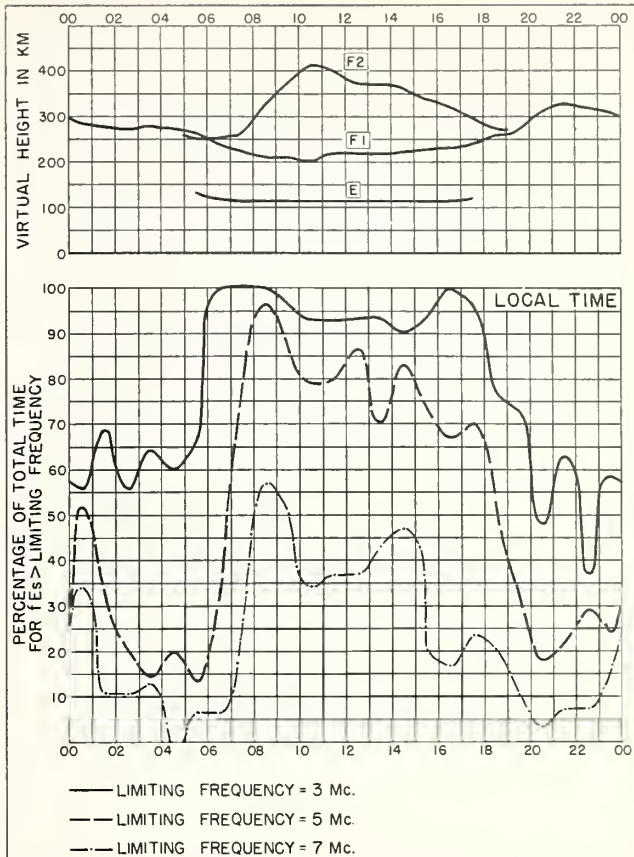


Fig. 14. OKINAWA I.

JUNE 1956

NBS 490

N. S. INTERNATIONAL RESEARCH OFFICE 115077

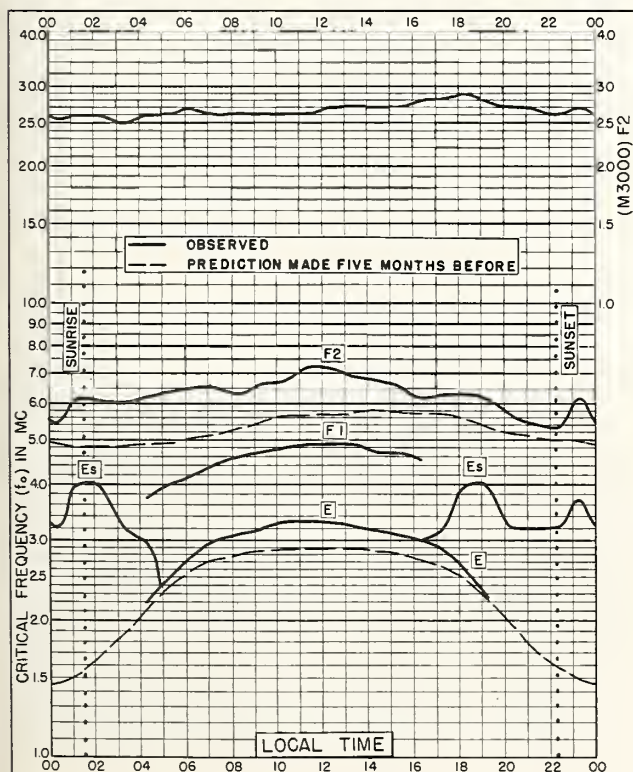


Fig. 15. TROMSØ, NORWAY
69.7°N, 19.0°E

MAY 1956

NBS 503

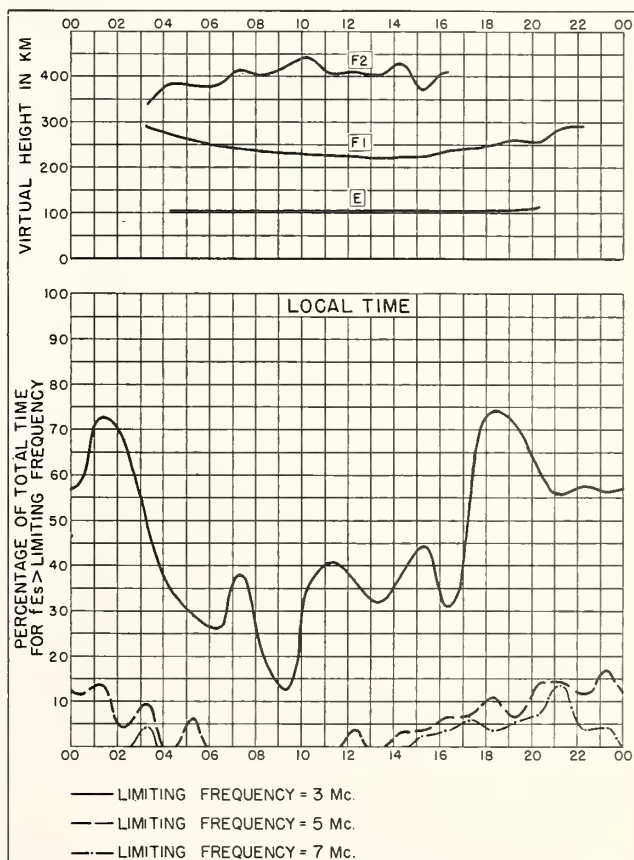
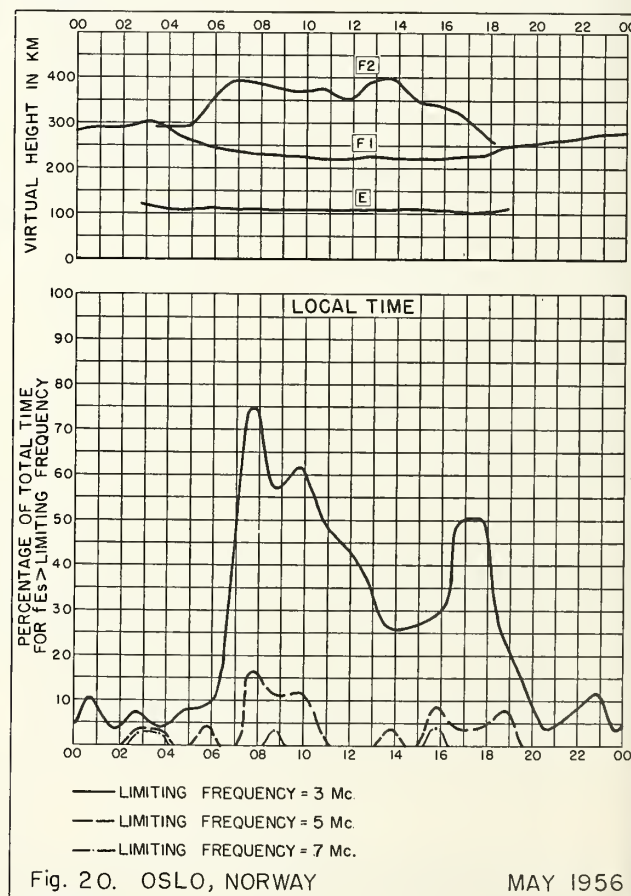
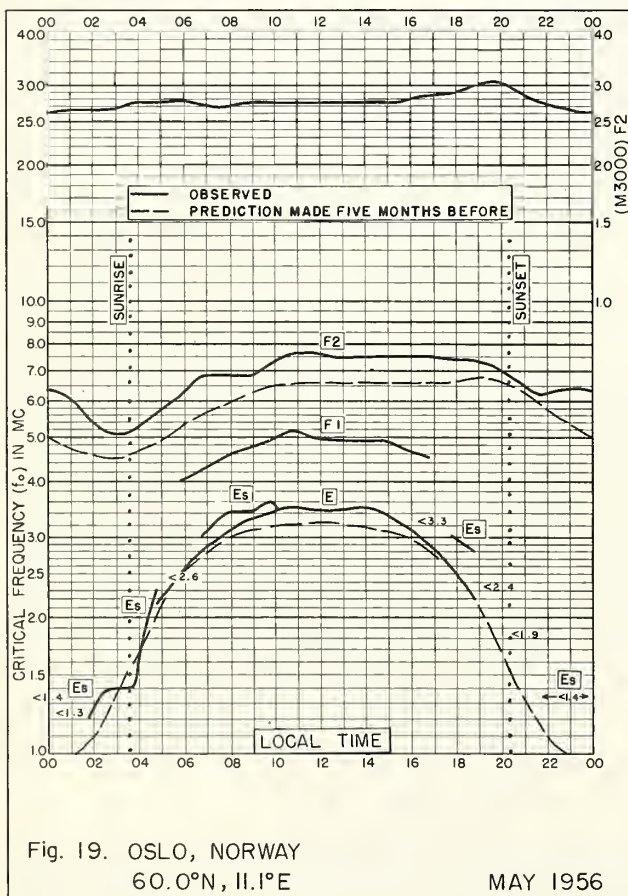
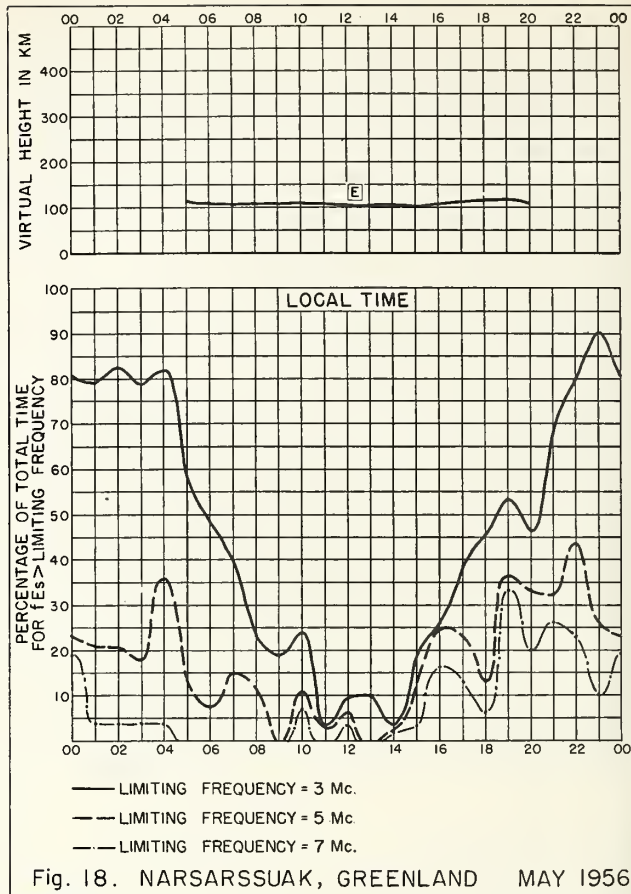
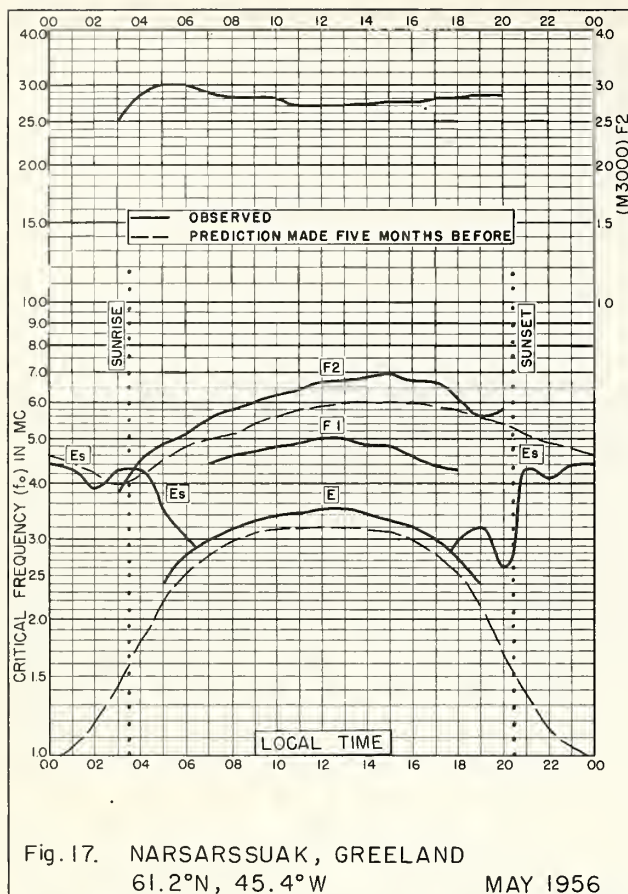


Fig. 16. TROMSØ, NORWAY

MAY 1956

NBS 490*

N. S. INTERNATIONAL RESEARCH OFFICE 115077



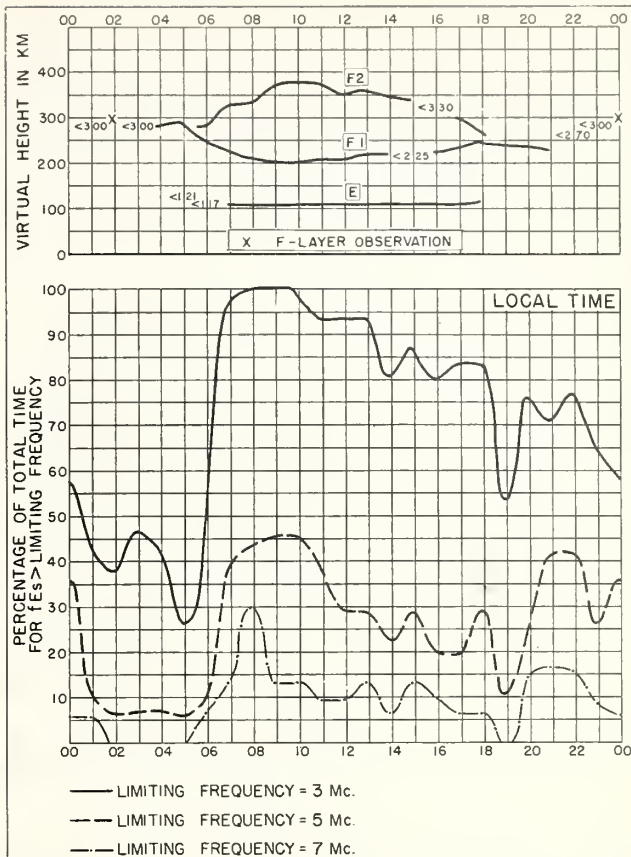
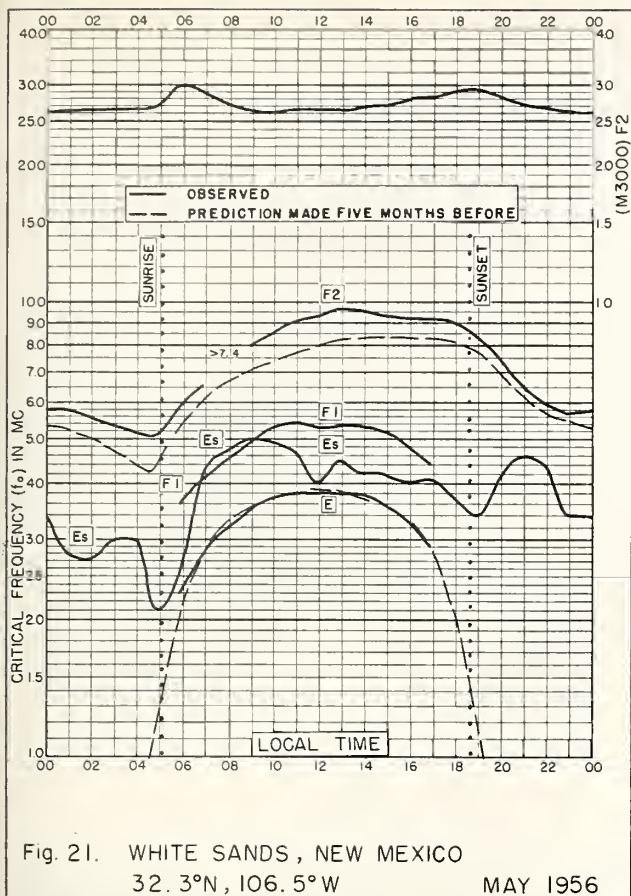


Fig. 22. WHITE SANDS, NEW MEXICO MAY 1956

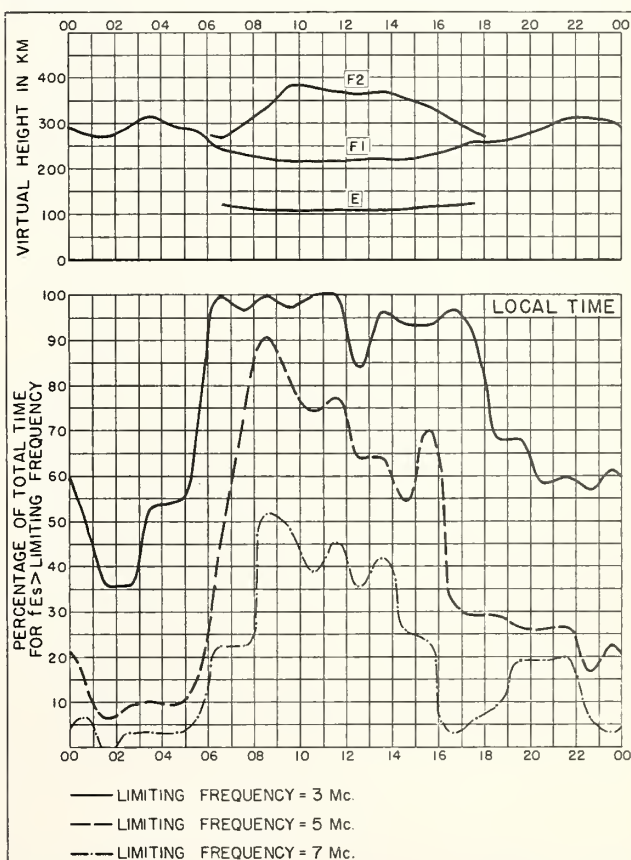
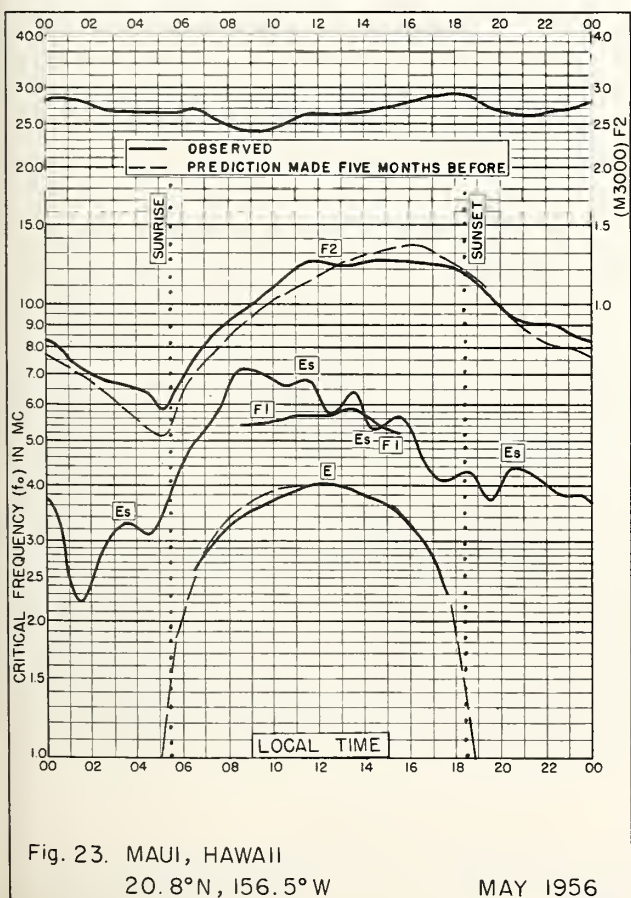


Fig. 24. MAUI, HAWAII MAY 1956

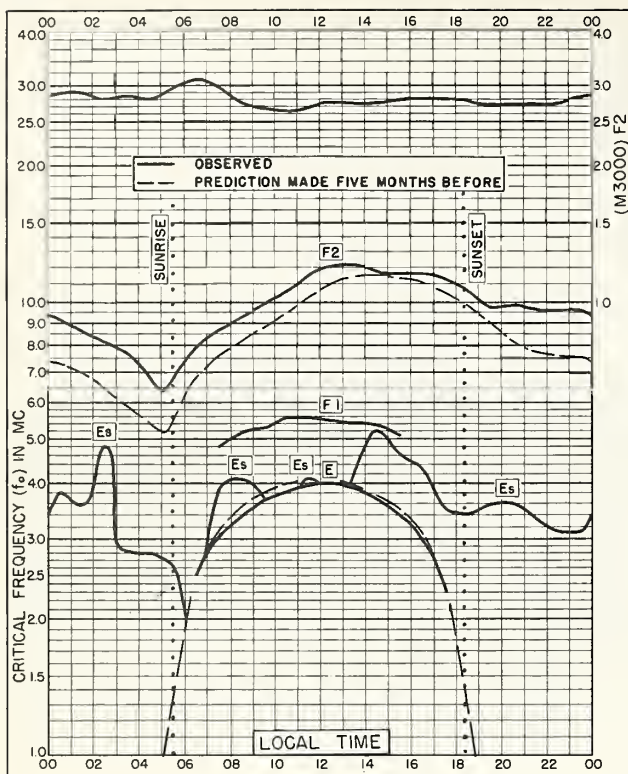


Fig. 25. PUERTO RICO, W.I.
18.5°N, 67.2°W

MAY 1956

NBS 503

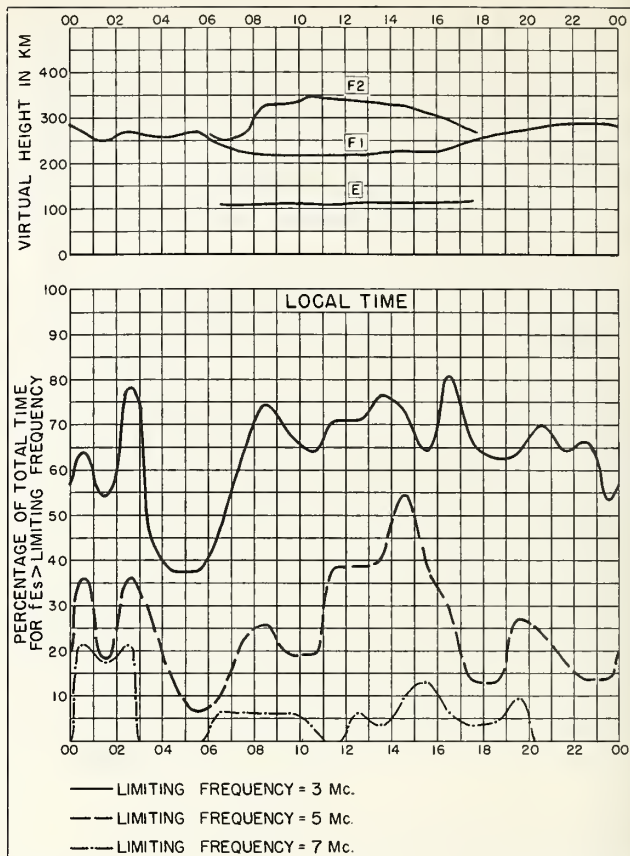


Fig. 26. PUERTO RICO, W.I.

MAY 1956

NBS 490

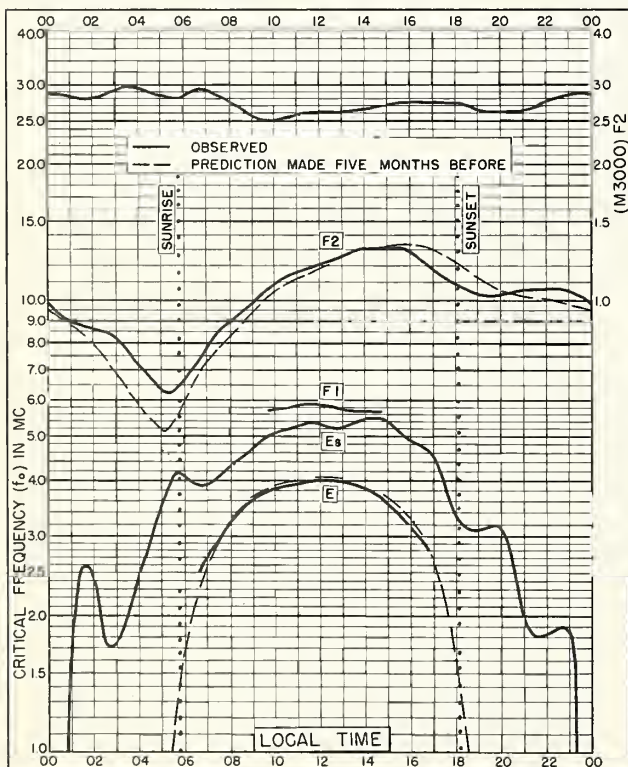


Fig. 27. PANAMA CANAL ZONE
9.4°N, 79.9°W

MAY 1956

NBS 503

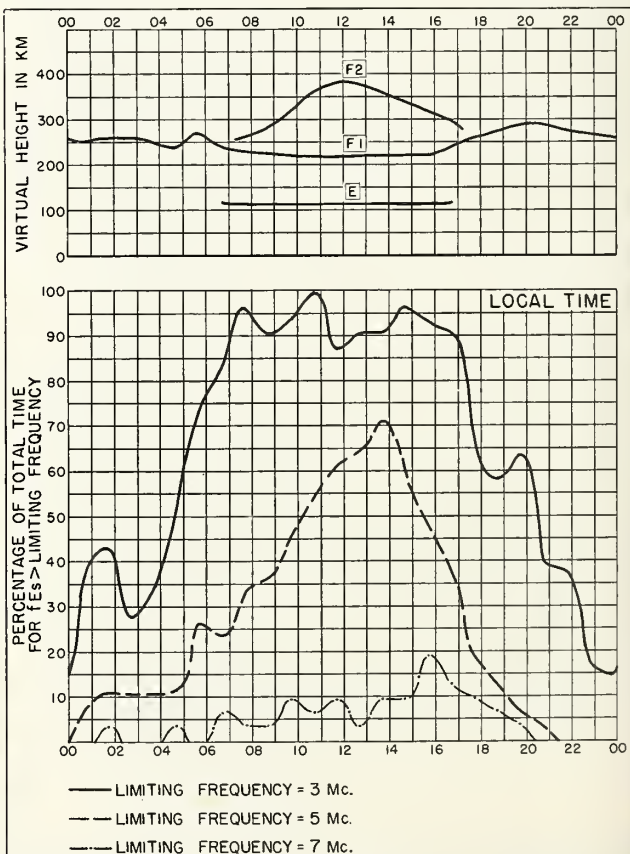


Fig. 28. PANAMA CANAL ZONE

MAY 1956

NBS 490

NBS 490

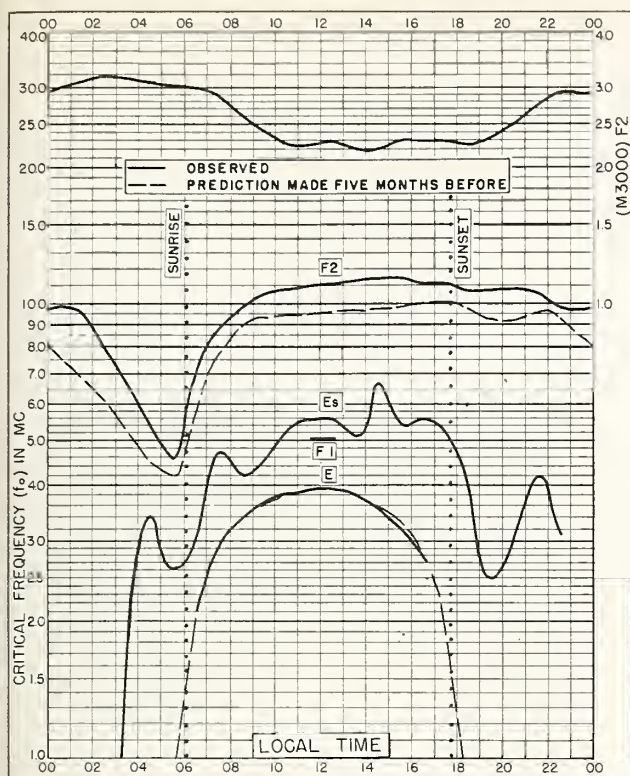


Fig. 29. TALARÁ, PERU
4.6°S, 81.3°W

MAY 1956

NBS 503

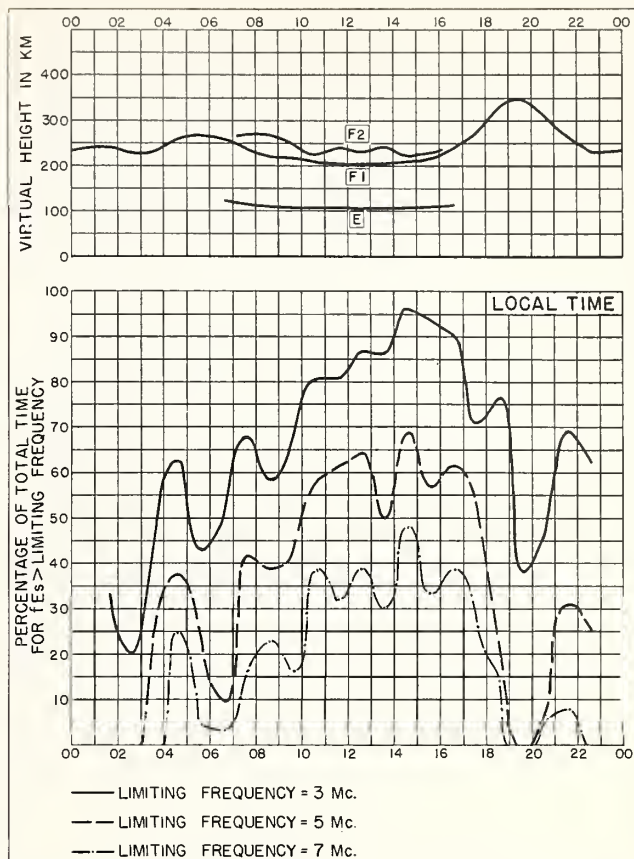


Fig. 30. TALARÁ, PERU

MAY 1956

NBS 490

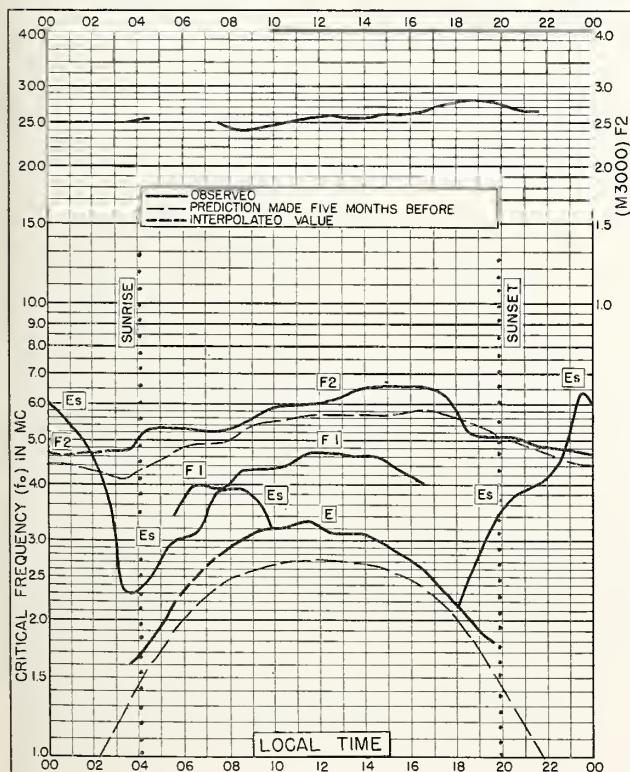


Fig. 31. POINT BARROW, ALASKA
71.3°N, 156.8°W

APRIL 1956

NBS 503

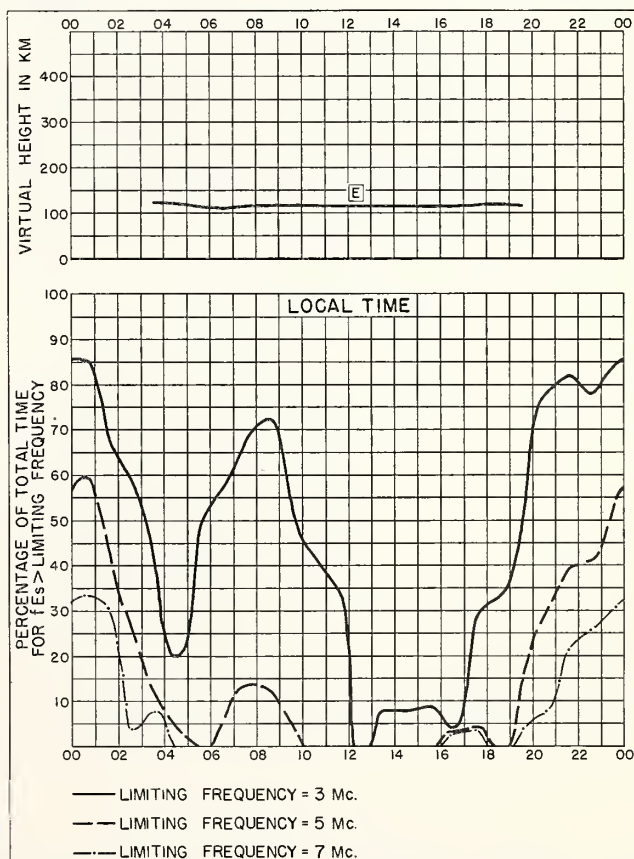


Fig. 32. POINT BARROW, ALASKA

APRIL 1956

NBS 490

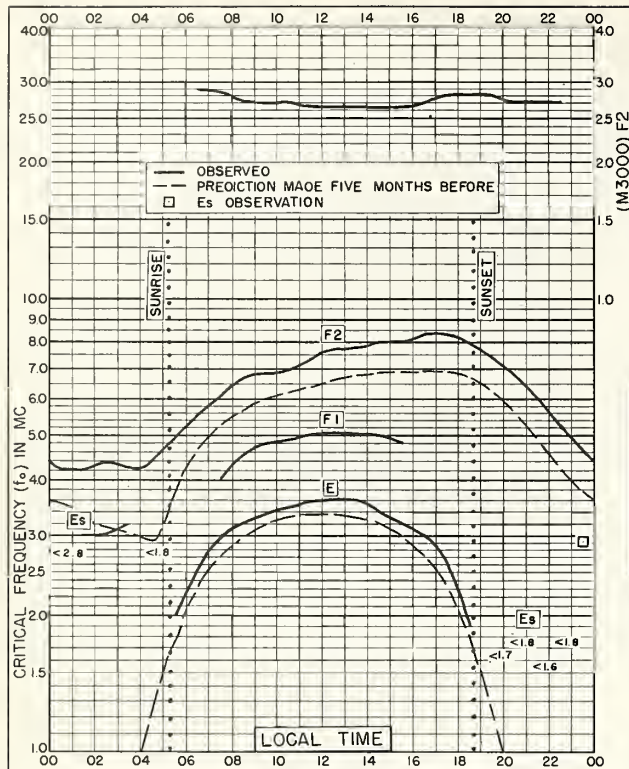


Fig. 33. WINNIPEG, CANADA
49.9°N, 97.4°W

APRIL 1956

NBS 503

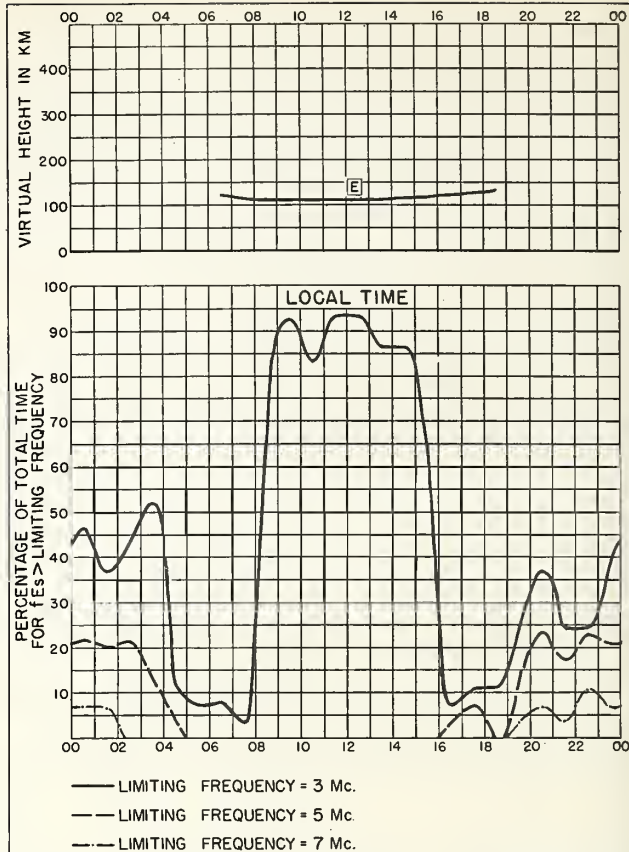


Fig. 34. WINNIPEG, CANADA

APRIL 1956

NBS 490

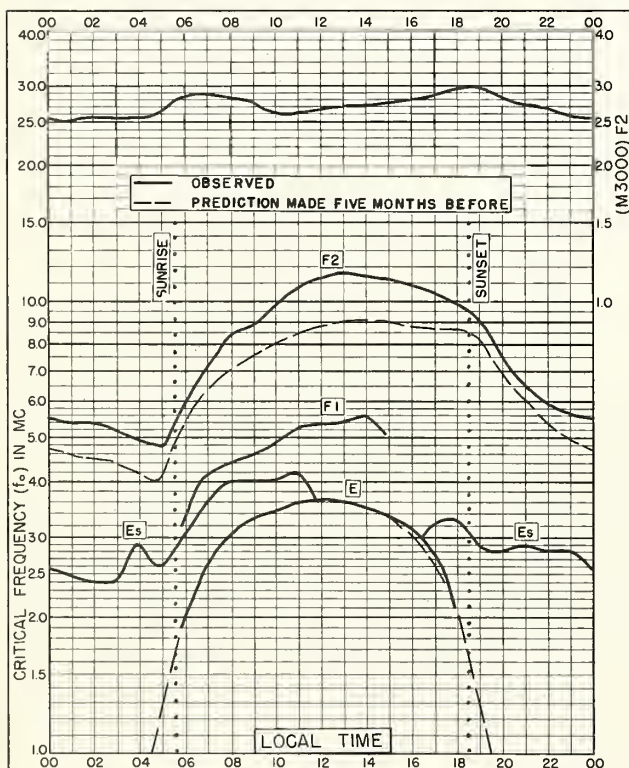


Fig. 35. SAN FRANCISCO, CALIFORNIA
37.4°N, 122.2°W

APRIL 1956

NBS 503

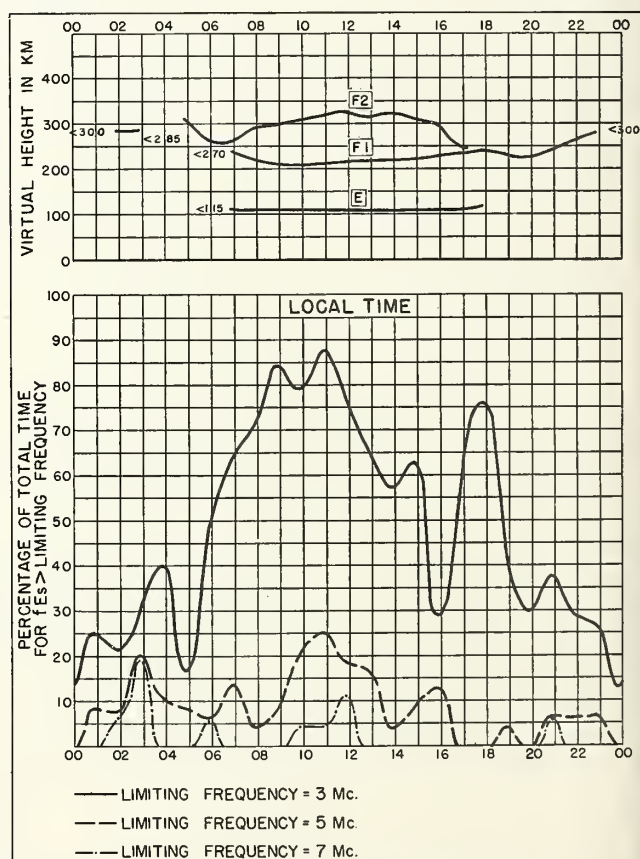


Fig. 36. SAN FRANCISCO, CALIFORNIA

APRIL 1956

NBS 490

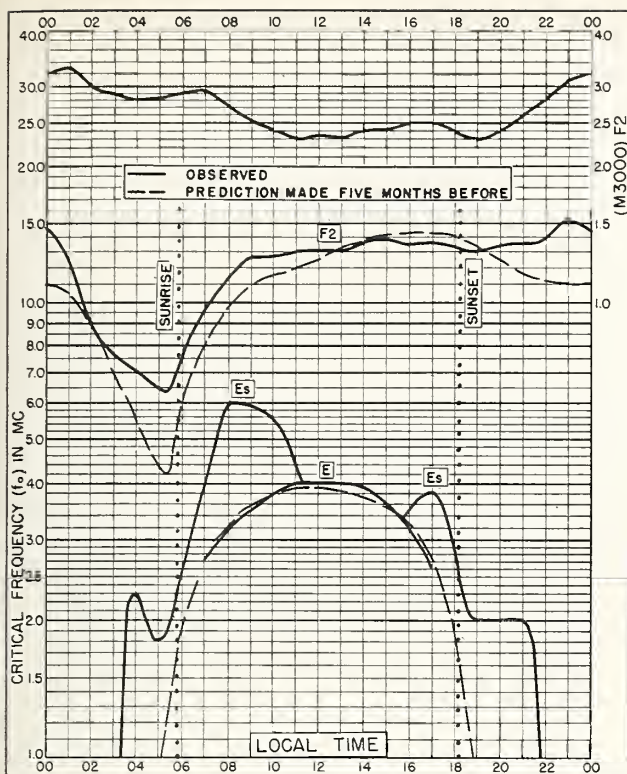


Fig. 37. BAGUIO, P.I.
16.4°N, 120.6°E

APRIL 1956

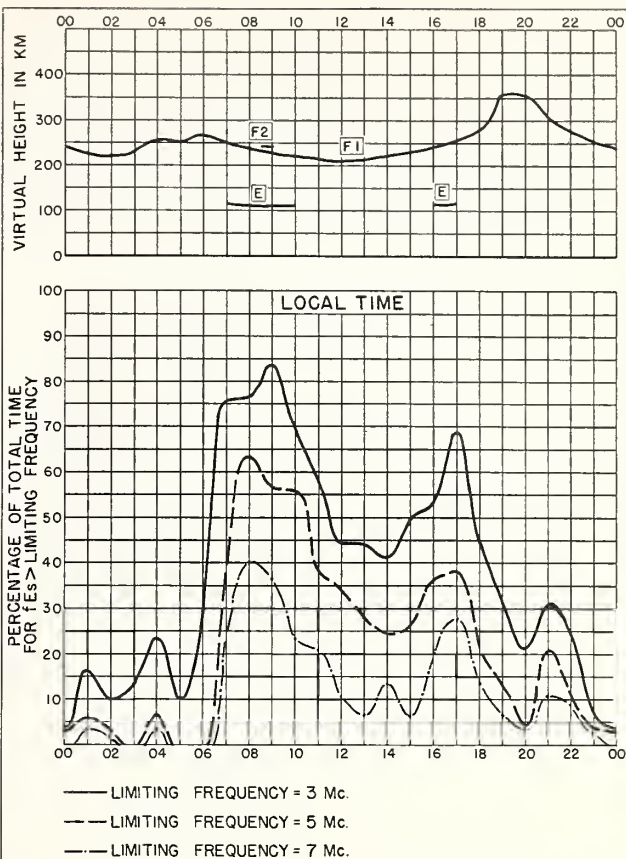


Fig. 38. BAGUIO, P.I.

APRIL 1956

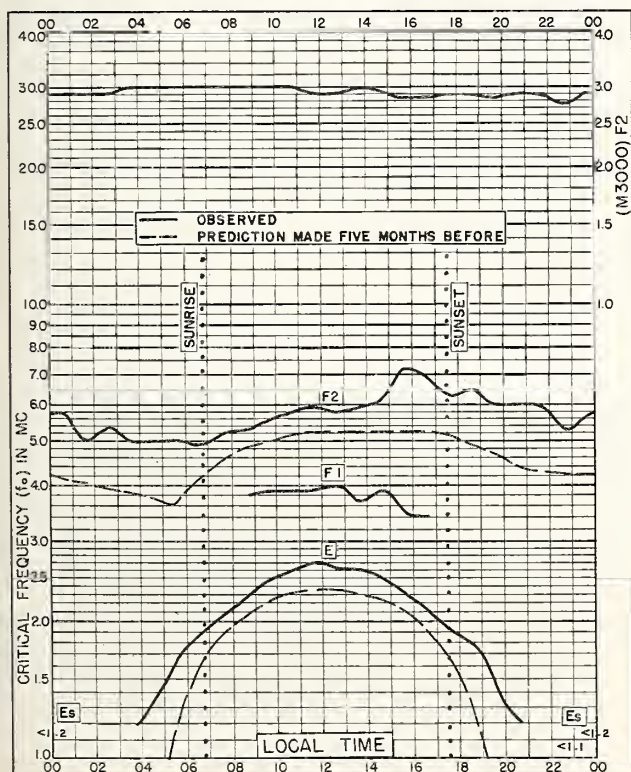


Fig. 39. RESOLUTE BAY, CANADA
74.7°N, 94.9°W

MARCH 1956

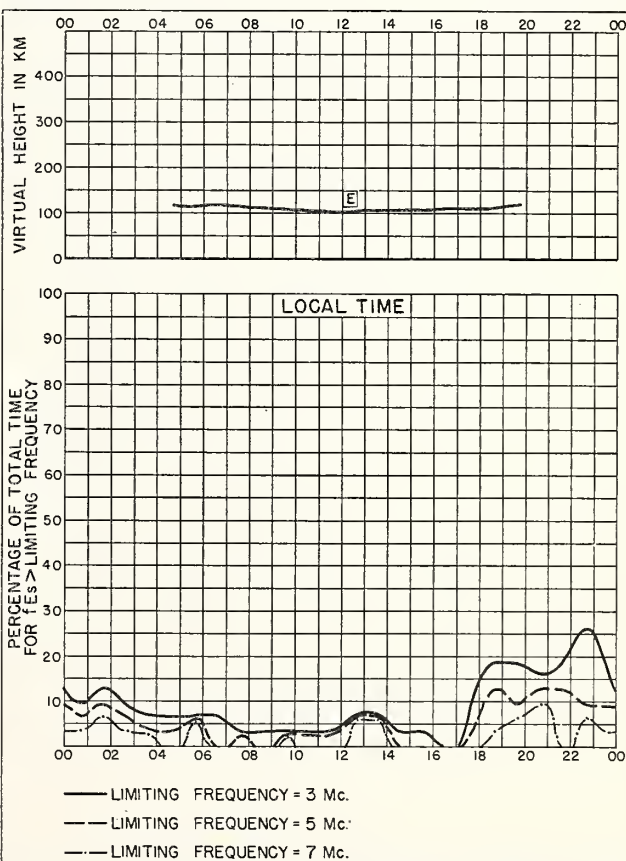


Fig. 40. RESOLUTE BAY, CANADA MARCH 1956

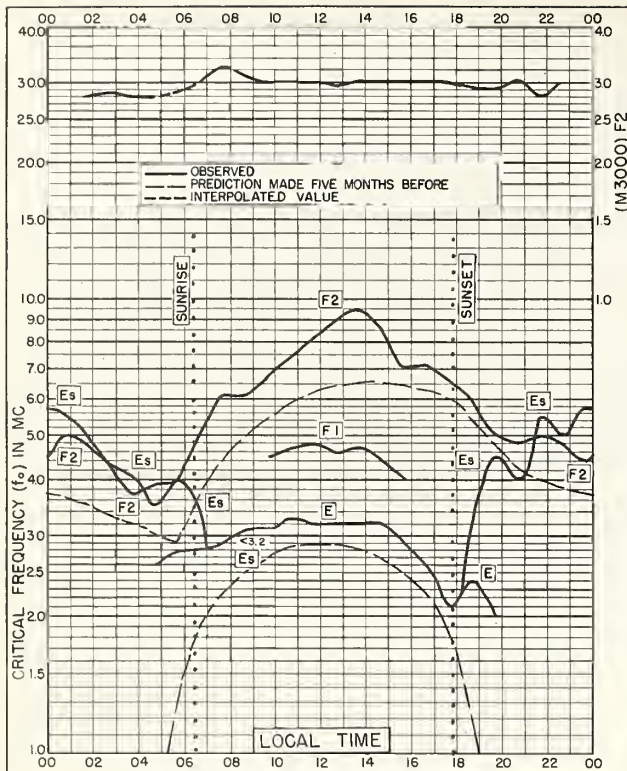


Fig. 41. CHURCHILL, CANADA
58.8°N, 94.2°W

MARCH 1956

NBS 505

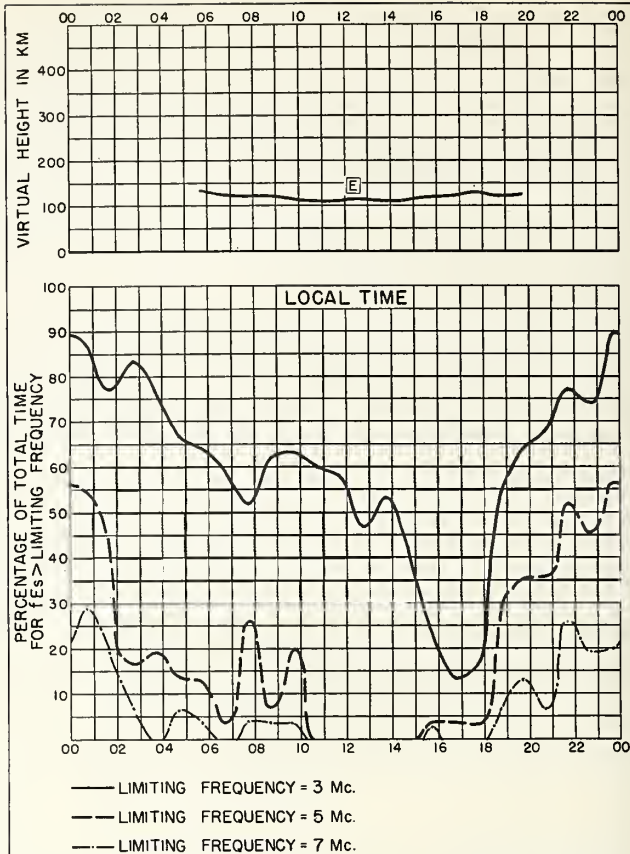


Fig. 42. CHURCHILL, CANADA

MARCH 1956

NBS 490

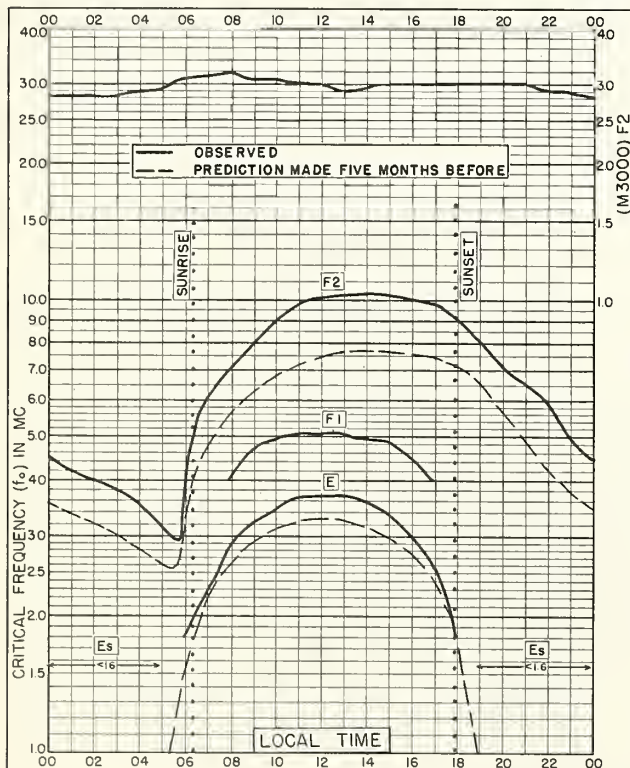


Fig. 43. OTTAWA, CANADA
45.4°N, 75.9°W

MARCH 1956

NBS 505

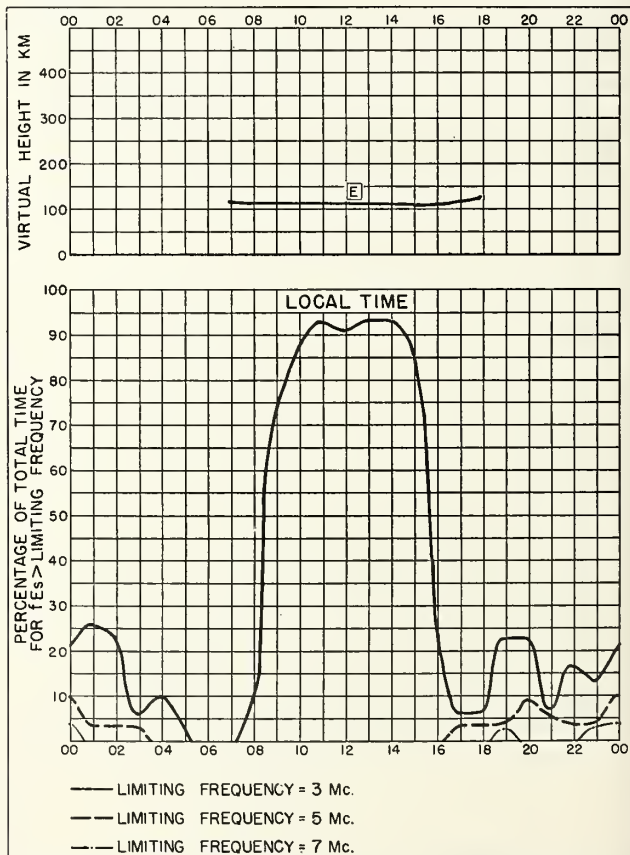


Fig. 44. OTTAWA, CANADA

MARCH 1956

NBS 490

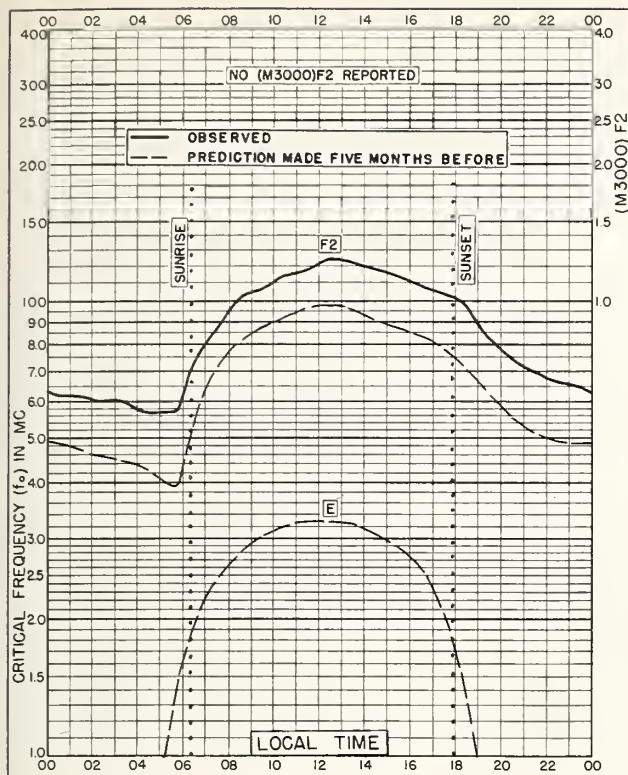


Fig. 45. WAKKANAI, JAPAN
45.4°N, 141.7°E

MARCH 1956

NBS 503

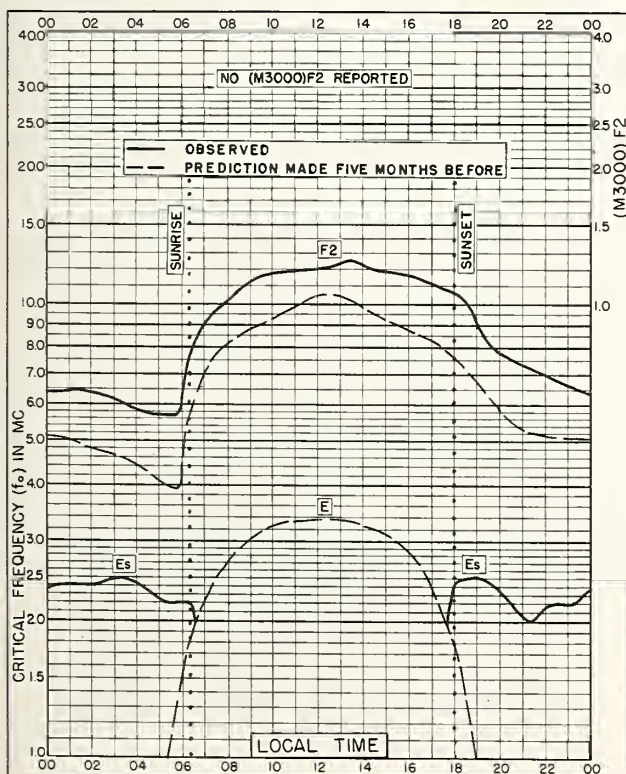


Fig. 47. AKITA, JAPAN
39.7°N, 140.1°E

MARCH 1956

NBS 503

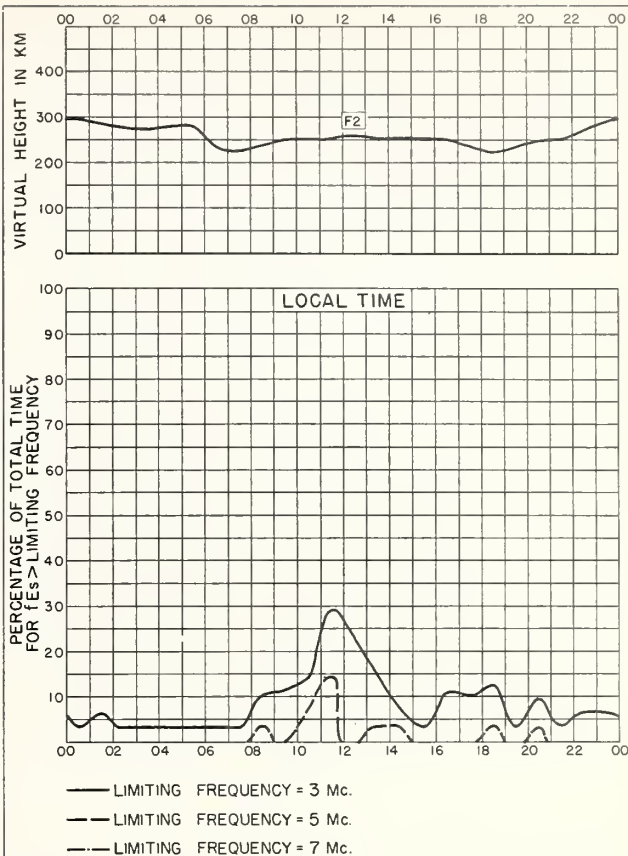


Fig. 46. WAKKANAI, JAPAN

MARCH 1956

NBS 490

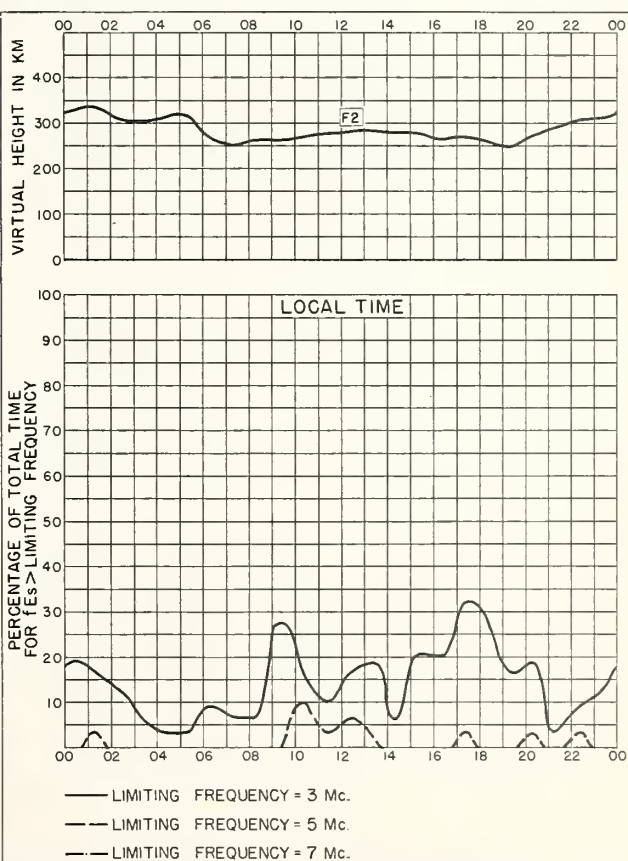


Fig. 48. AKITA, JAPAN

MARCH 1956

NBS 490

NBS 490

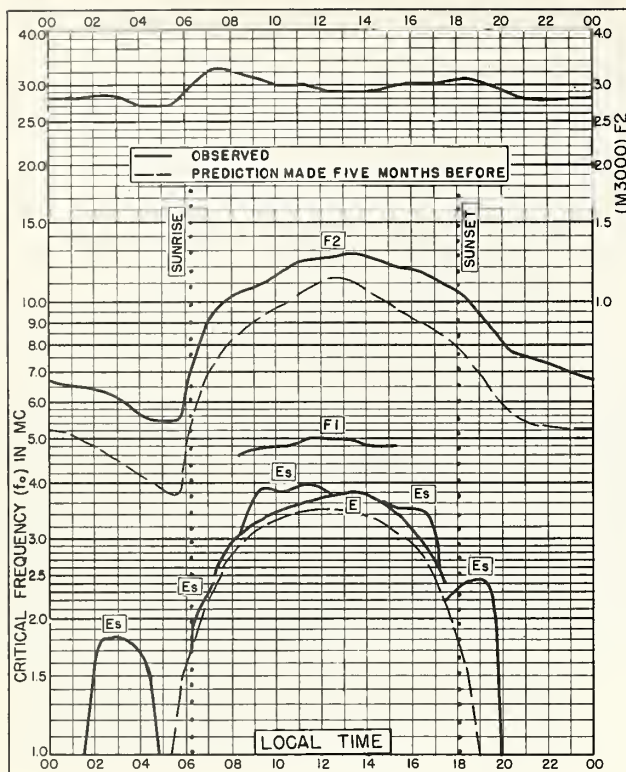


Fig. 49. TOKYO, JAPAN
35.7°N, 139.5°E

MARCH 1956

NBS 503

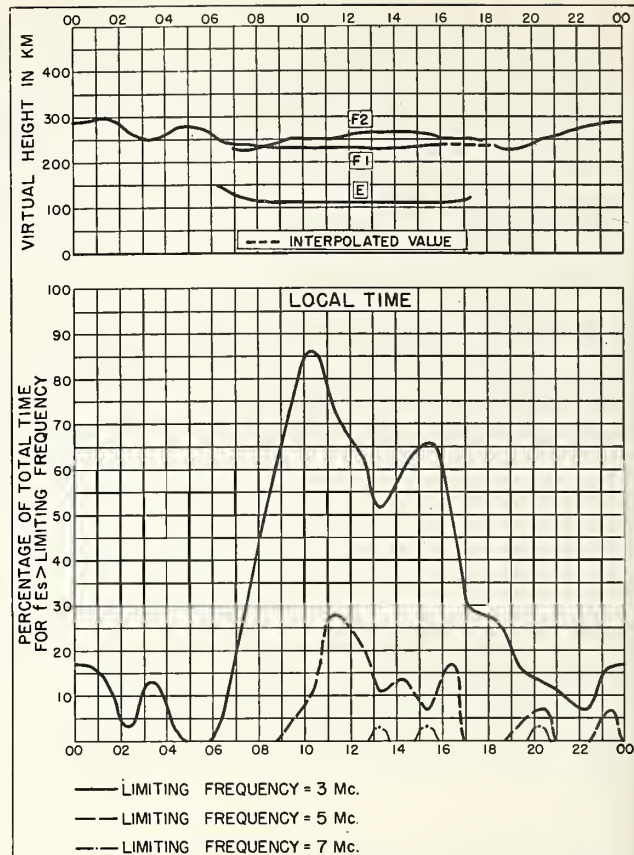


Fig. 50. TOKYO, JAPAN

MARCH 1956

NBS 490

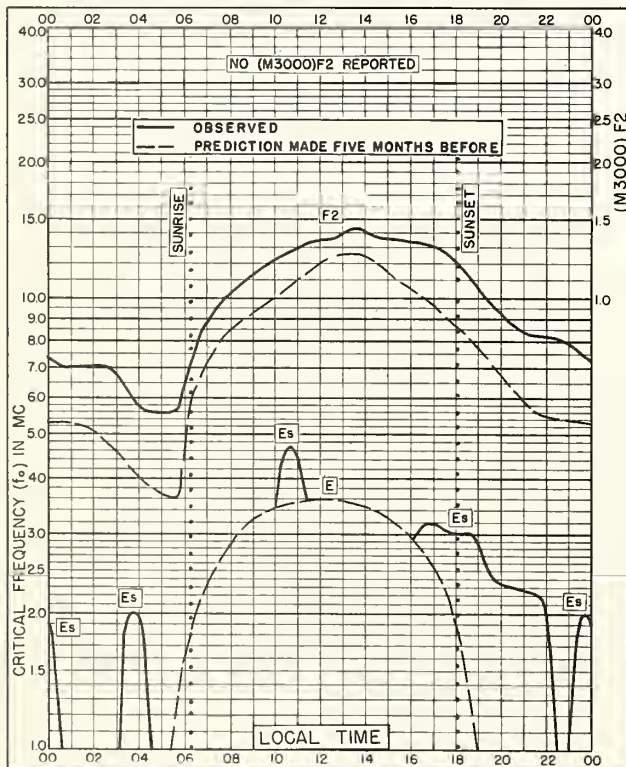


Fig. 51. YAMAGAWA, JAPAN
31.2°N, 130.6°E

MARCH 1956

NBS 503

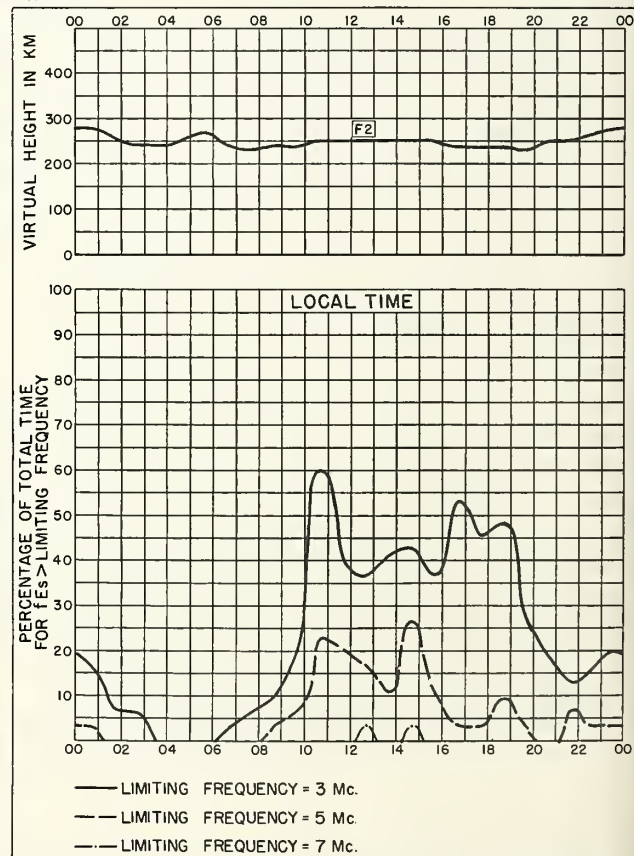


Fig. 52. YAMAGAWA, JAPAN

MARCH 1956

NBS 490

NBS 490

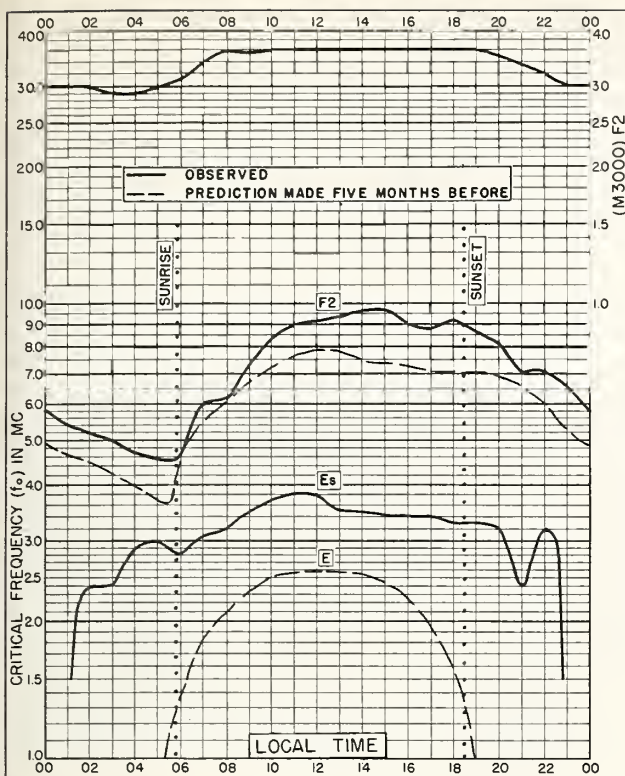


Fig. 53. DECEPCION I.
63.0°S, 60.7°W

MARCH 1956

NBS 503

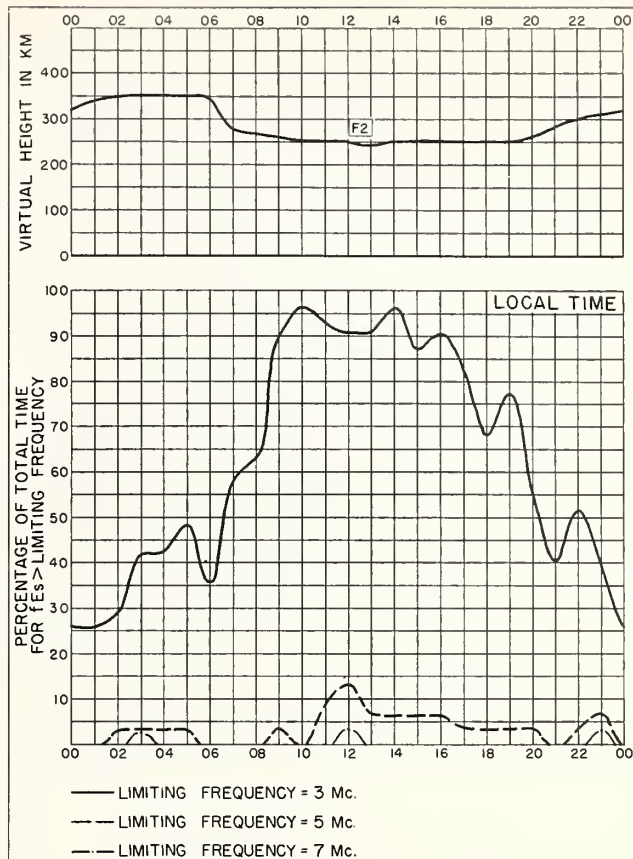


Fig. 54. DECEPCION I.

MARCH 1956

NBS 490

N. S. SUPERSTATION RESEARCH OFFICE 313277

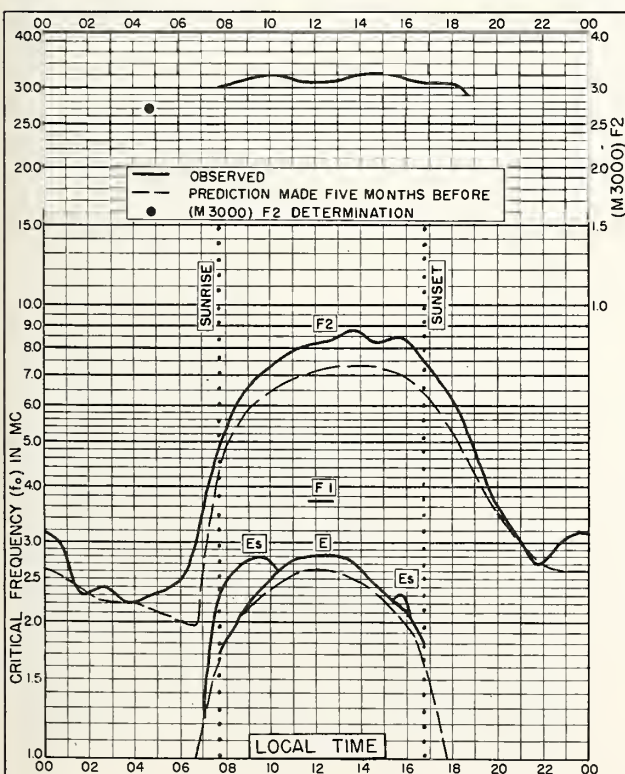


Fig. 55. INVERNESS, SCOTLAND
57.4°N, 4.2°W

FEBRUARY 1956

NBS 503

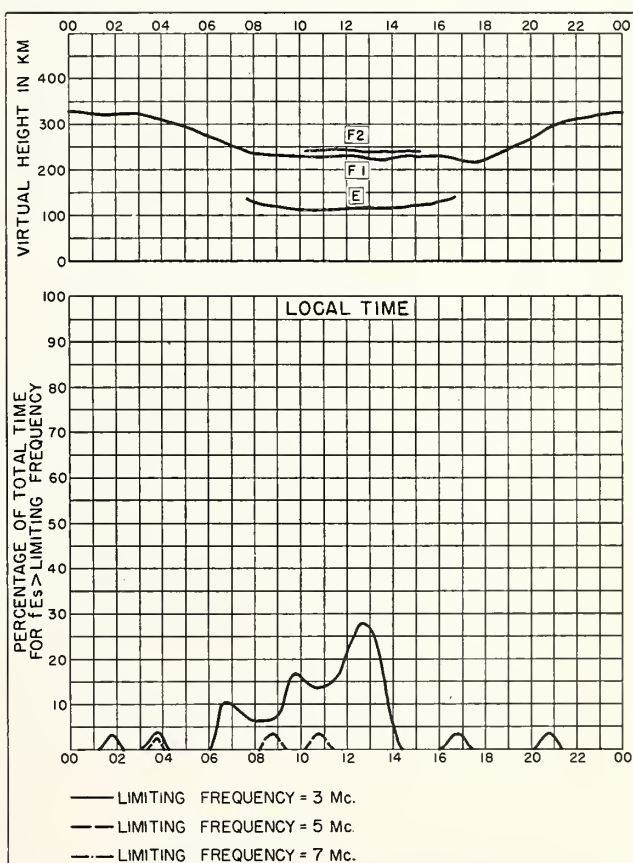


Fig. 56. INVERNESS, SCOTLAND FEBRUARY 1956

NBS 490

N. S. SUPERSTATION RESEARCH OFFICE 313277

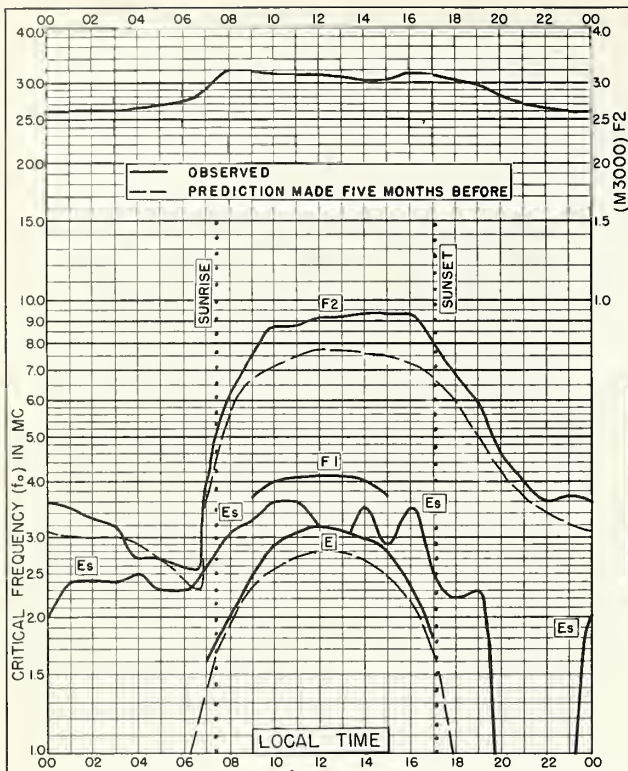


Fig. 57. SLOUGH, ENGLAND
51.5°N, 0.6°W FEBRUARY 1956

NBS 503

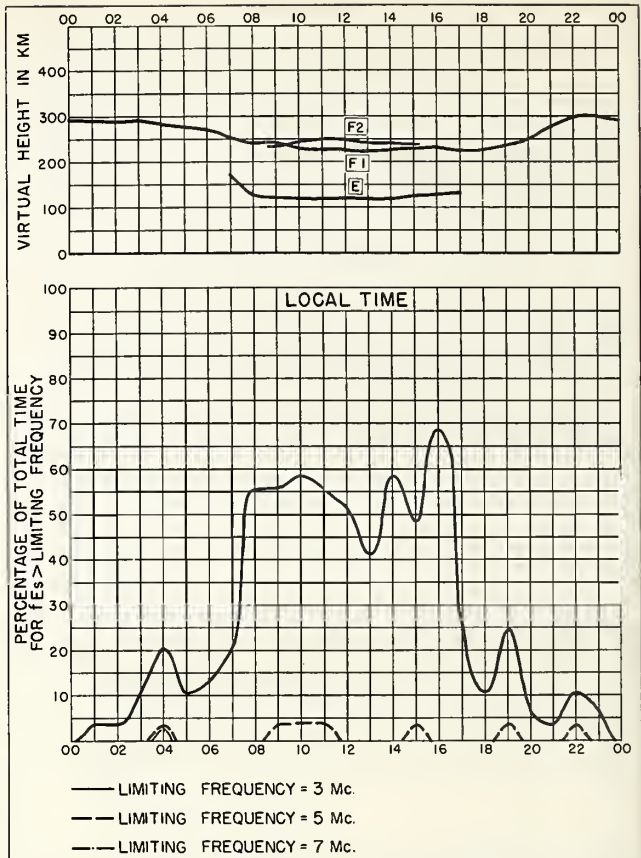


Fig. 58. SLOUGH, ENGLAND FEBRUARY 1956

NBS 490

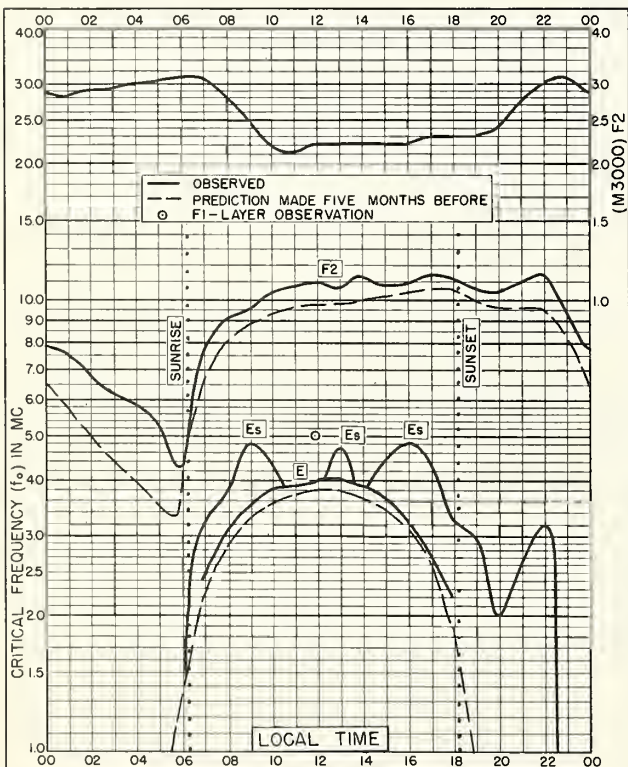


Fig. 59. SINGAPORE, BRITISH MALAYA
1.3°N, 103.8°E FEBRUARY 1956

NBS 503

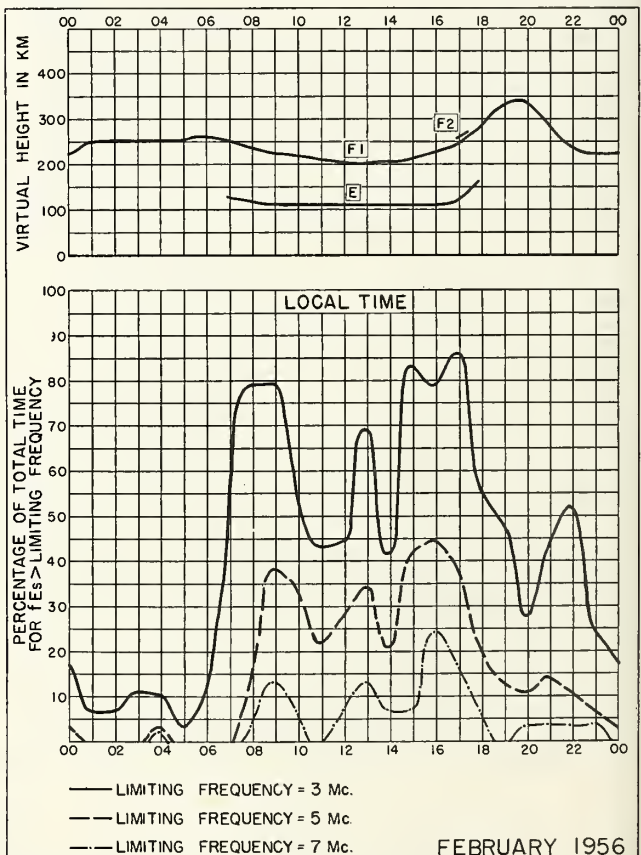


Fig. 60. SINGAPORE, BRITISH MALAYA

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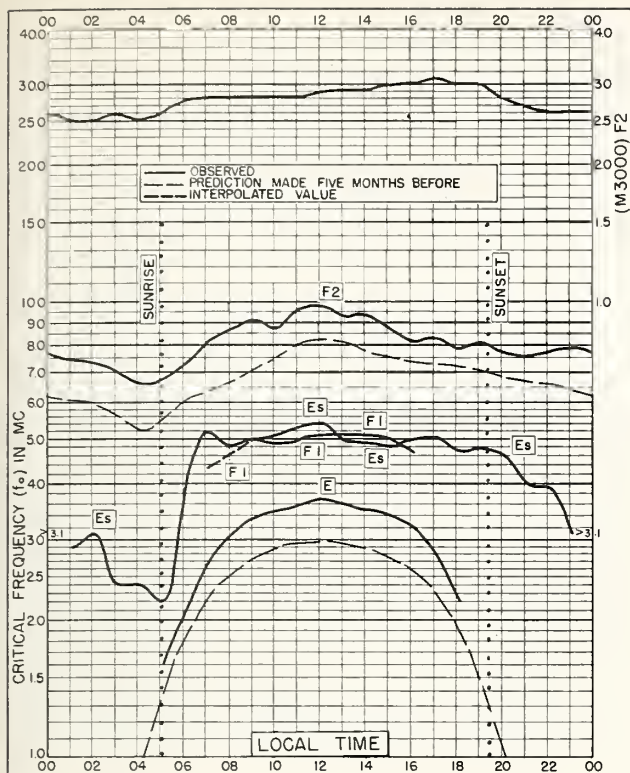


Fig. 61. FALKLAND IS.
51.7°S, 57.8°W FEBRUARY 1956

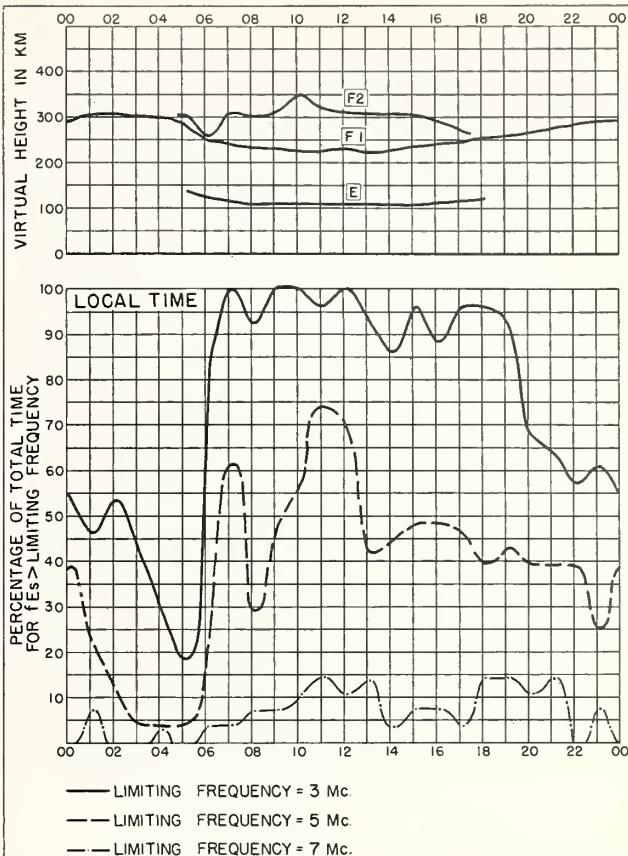


Fig. 62. FALKLAND IS. FEBRUARY 1956

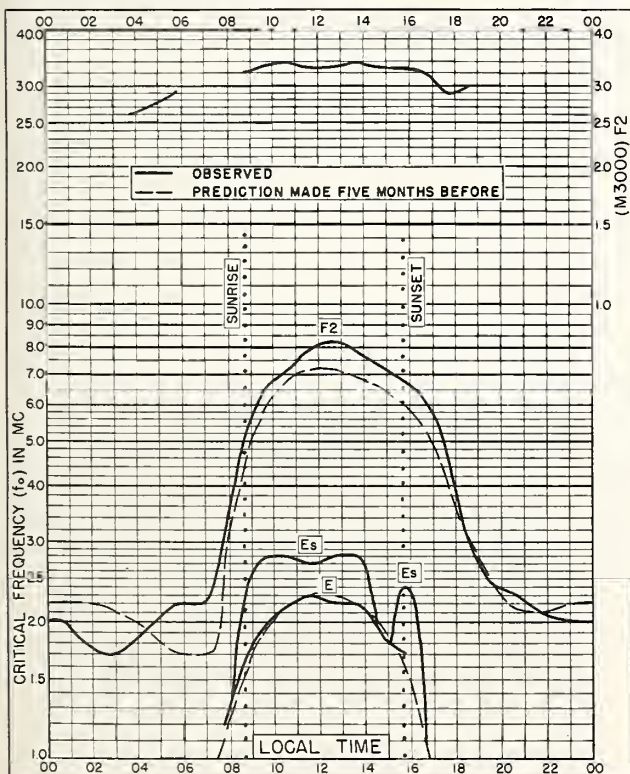


Fig. 63. INVERNESS, SCOTLAND
57.4°N, 4.2°W JANUARY 1956

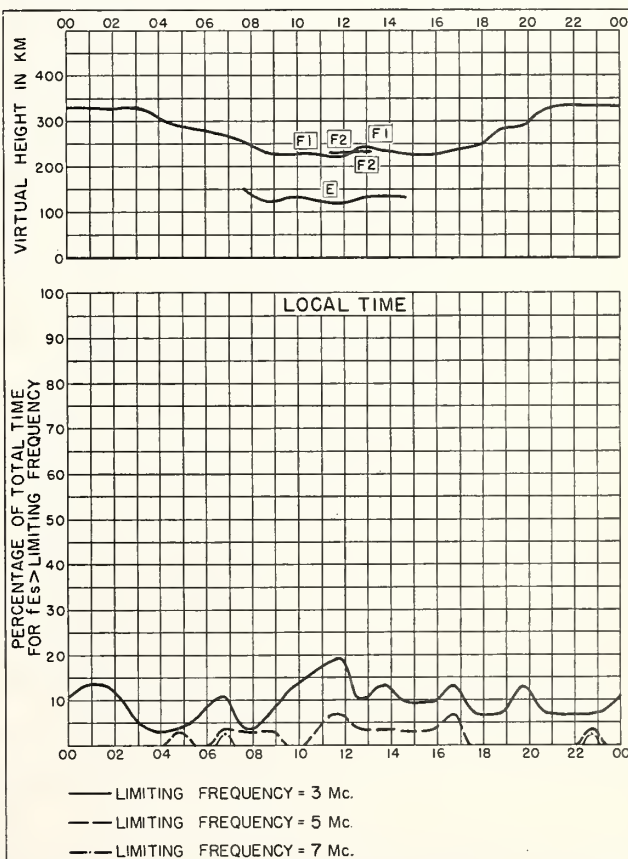


Fig. 64. INVERNESS, SCOTLAND JANUARY 1956

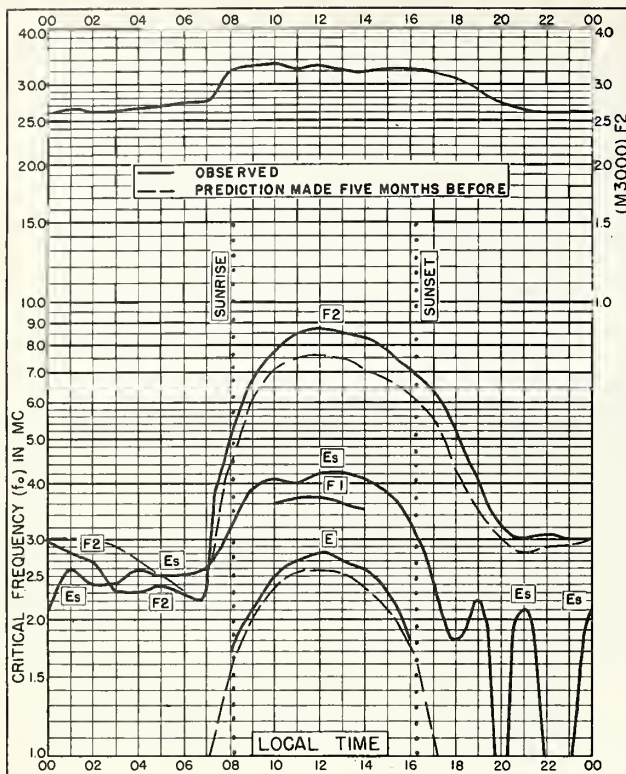


Fig. 65. SLOUGH, ENGLAND
51.5°N, 0.6°W

JANUARY 1956

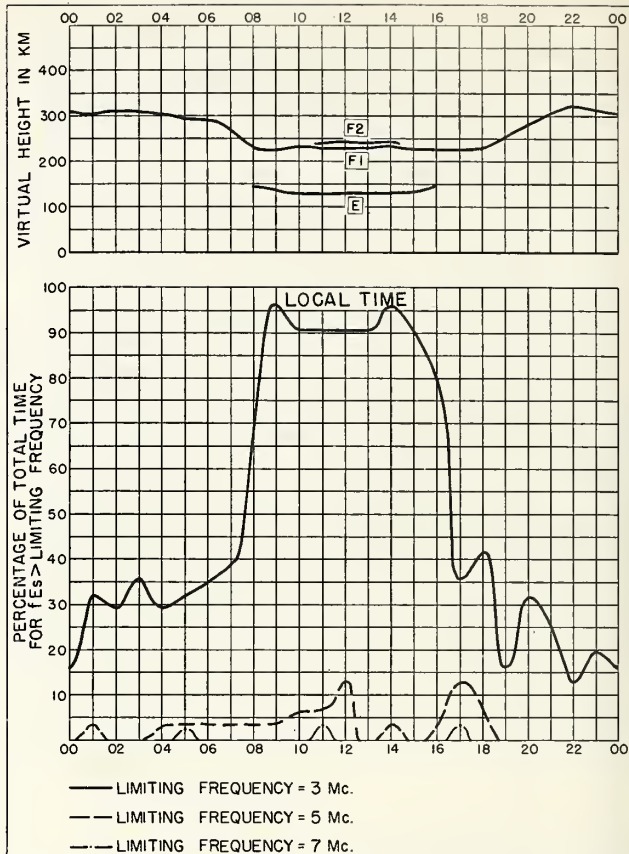


Fig. 66. SLOUGH, ENGLAND

JANUARY 1956

NBS 490

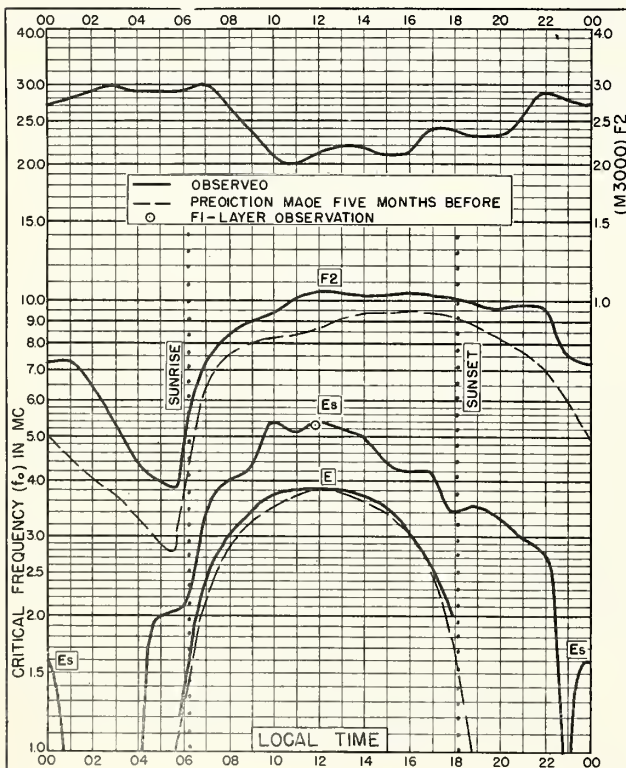


Fig. 67. SINGAPORE, BRITISH MALAYA
1.3°N, 103.8°E

JANUARY 1956

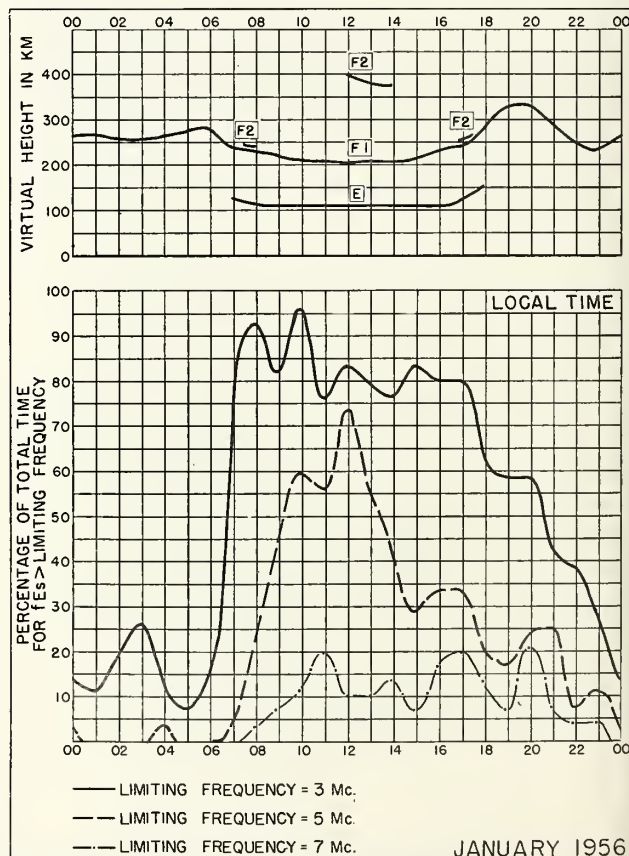


Fig. 68. SINGAPORE, BRITISH MALAYA

JANUARY 1956

NBS 490

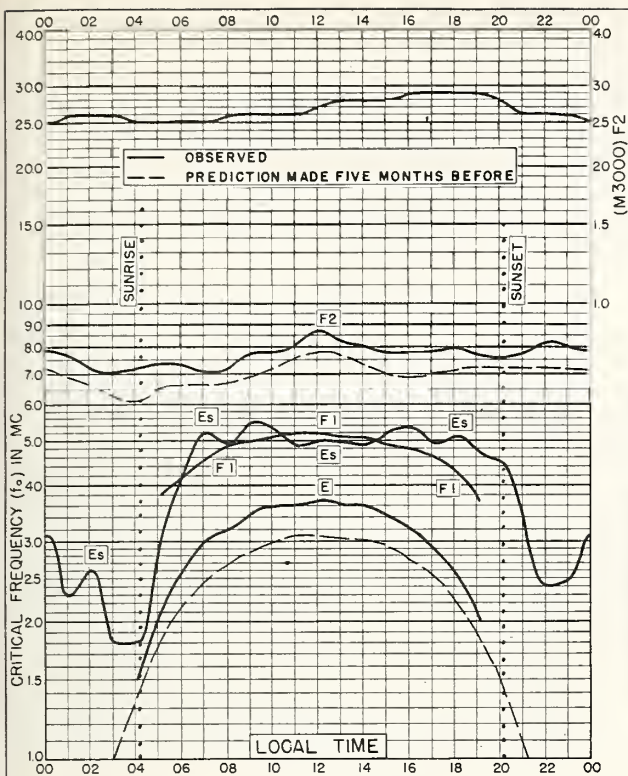


Fig. 69. FALKLAND IS.
51.7°S, 57.8°W

JANUARY 1956

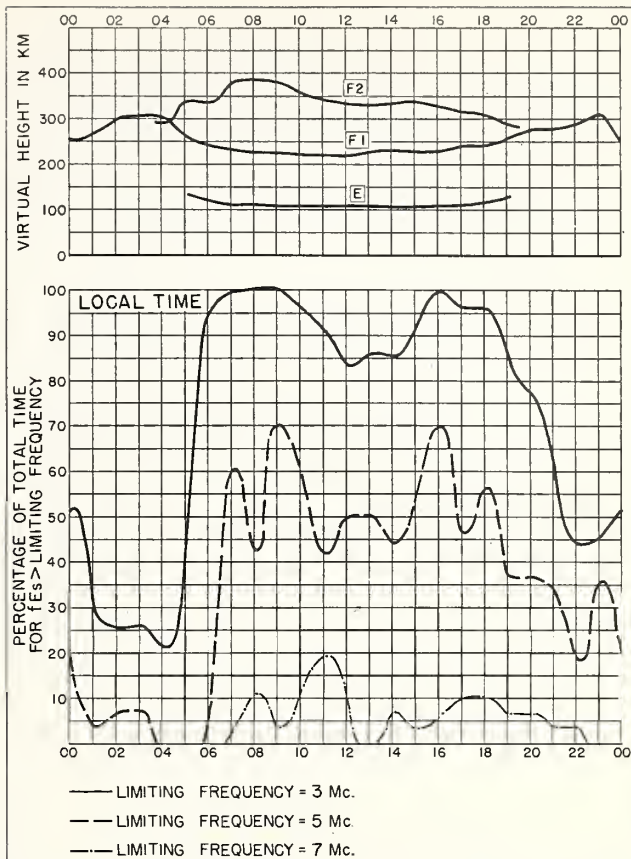


Fig. 70. FALKLAND IS.

JANUARY 1956

NBS 490

U. S. GOVERNMENT PRINTING OFFICE: 21-5877

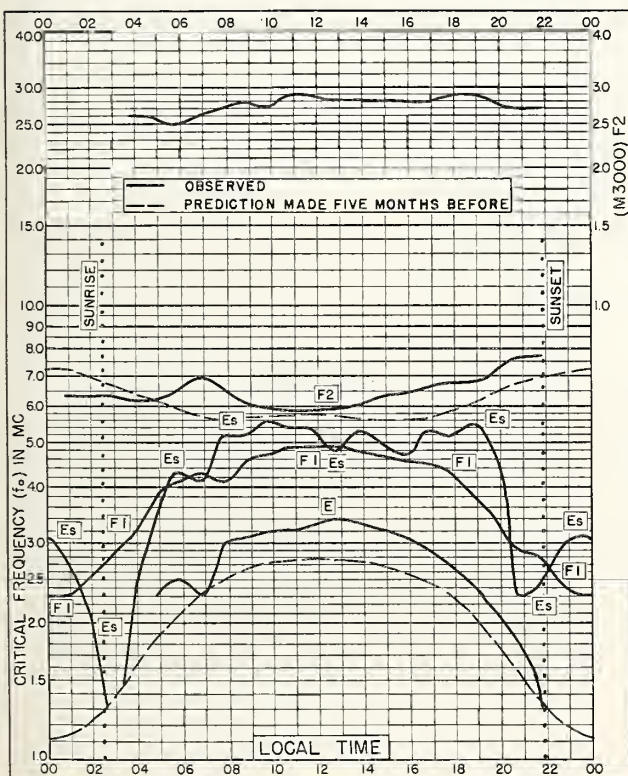


Fig. 71. PORT LOCKROY
64.8°S, 63.5°W

JANUARY 1956

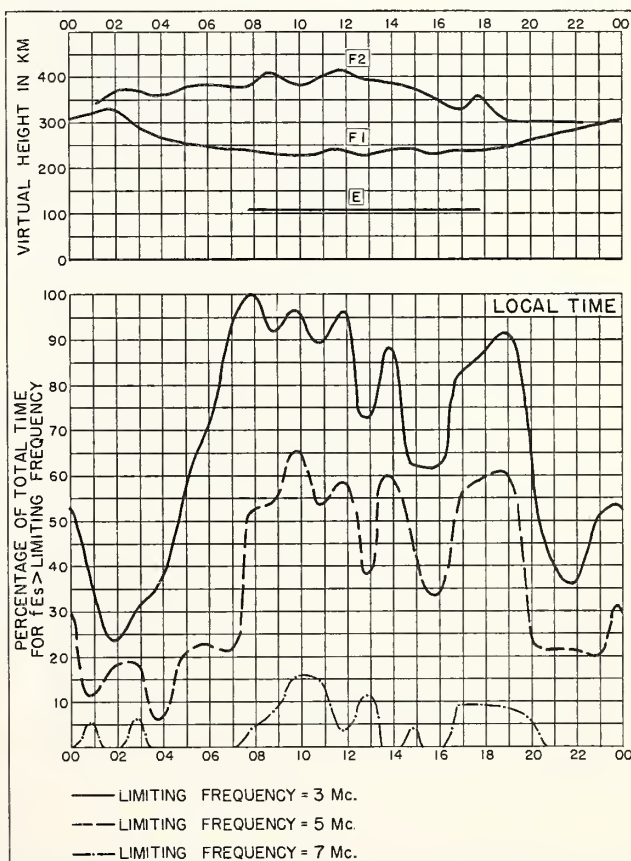


Fig. 72. PORT LOCKROY

JANUARY 1956

NBS 490

U. S. GOVERNMENT PRINTING OFFICE: 21-5877

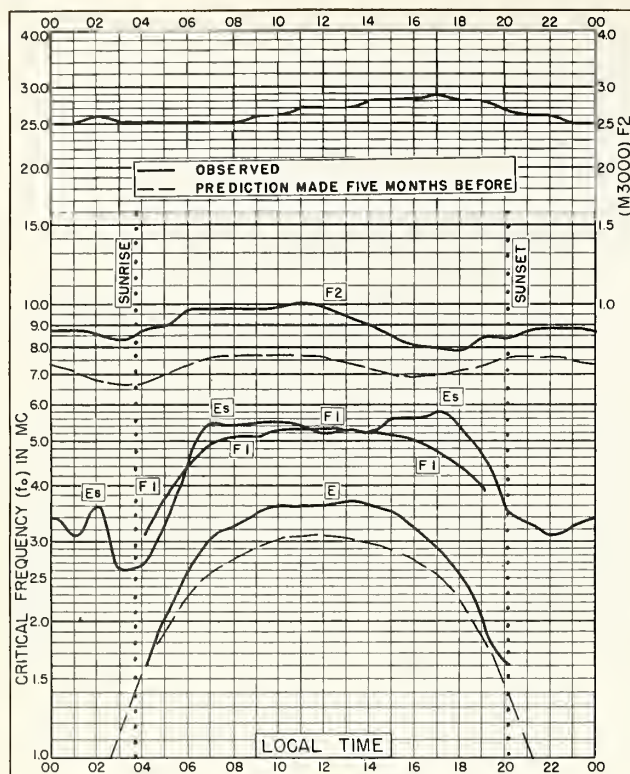


Fig. 73. FALKLAND IS.
51.7°S, 57.8°W

DECEMBER 1955

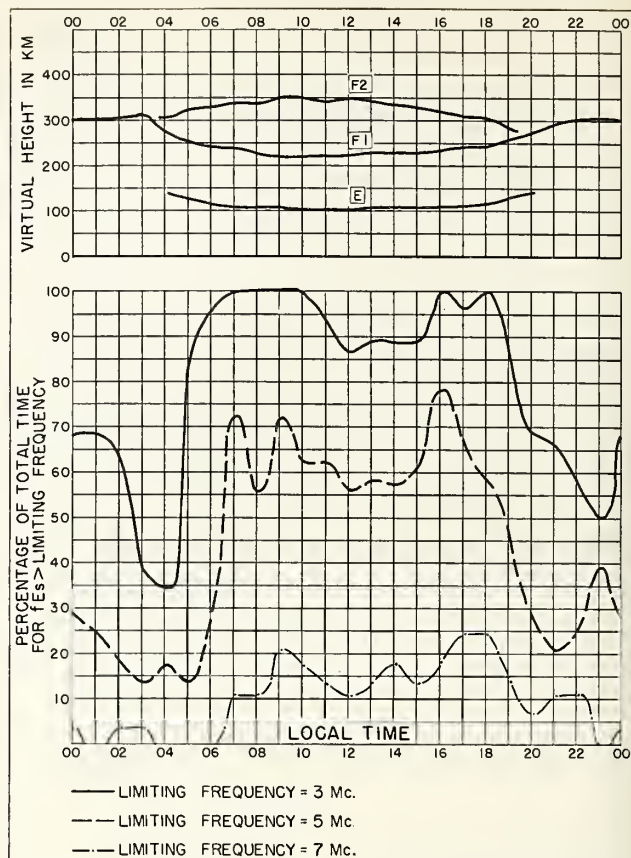


Fig. 74. FALKLAND IS.

DECEMBER 1955

NBS 490

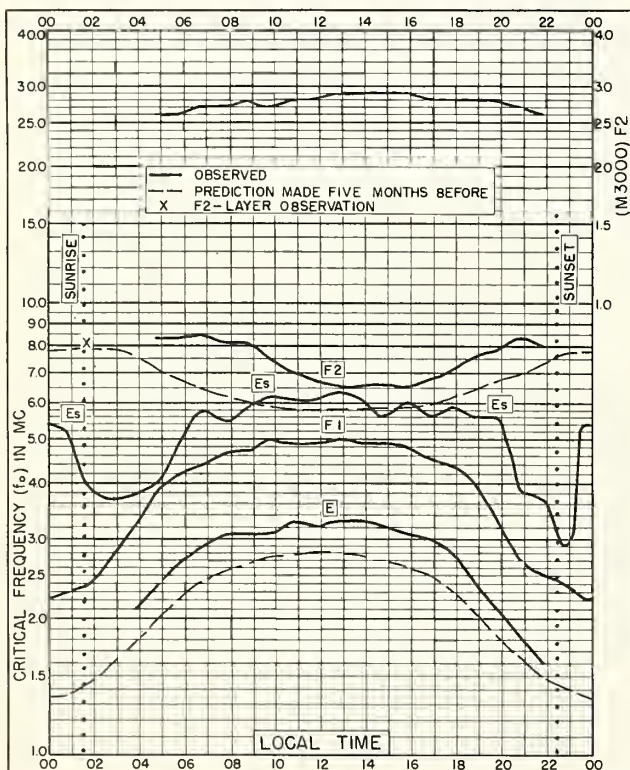


Fig. 75. PORT LOCKROY
64.8°S, 63.5°W

DECEMBER 1955

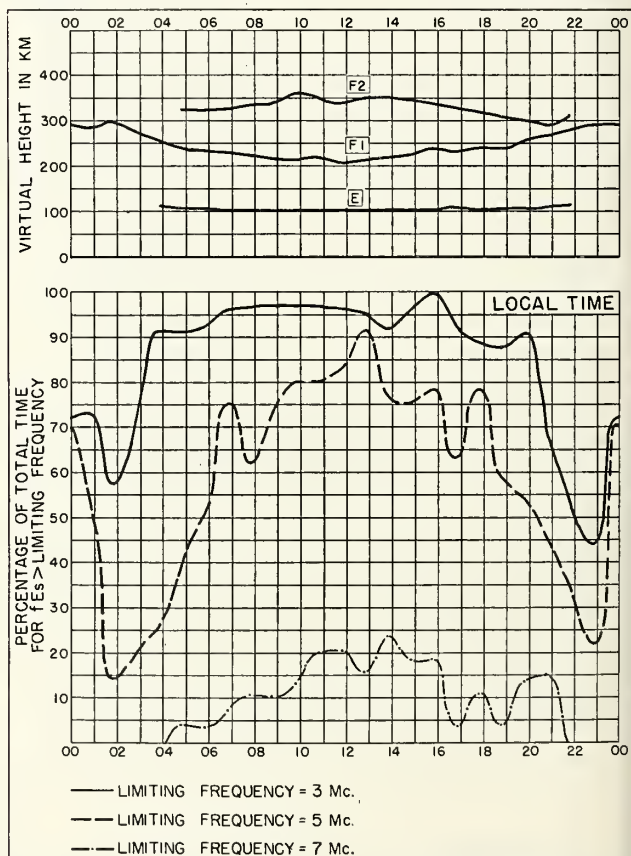


Fig. 76. PORT LOCKROY

DECEMBER 1955

NBS 490

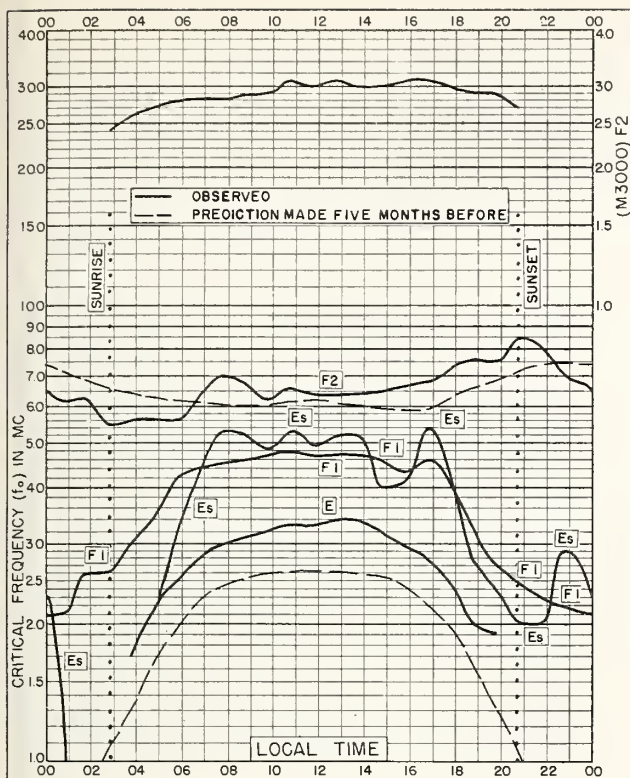


Fig. 77. PORT LOCKROY
64.8°S, 63.5°W NOVEMBER 1955

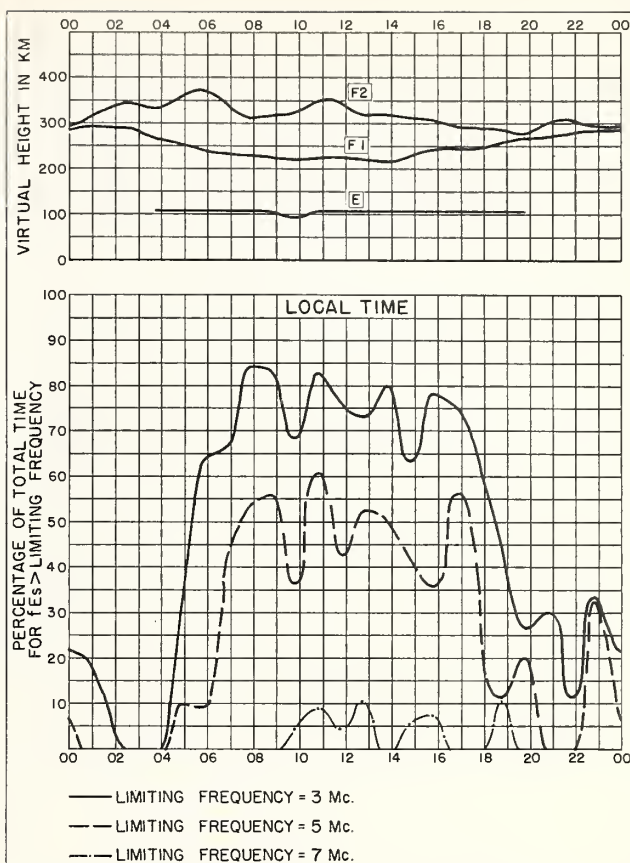


Fig. 78. PORT LOCKROY NOVEMBER 1955

NBS 490

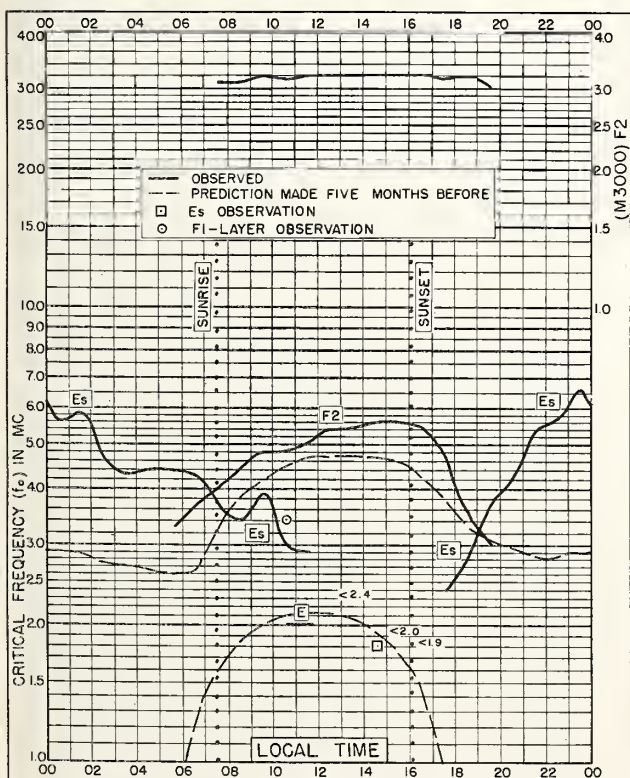


Fig. 79. POINT BARROW, ALASKA
71.3°N, 156.8°W OCTOBER 1955

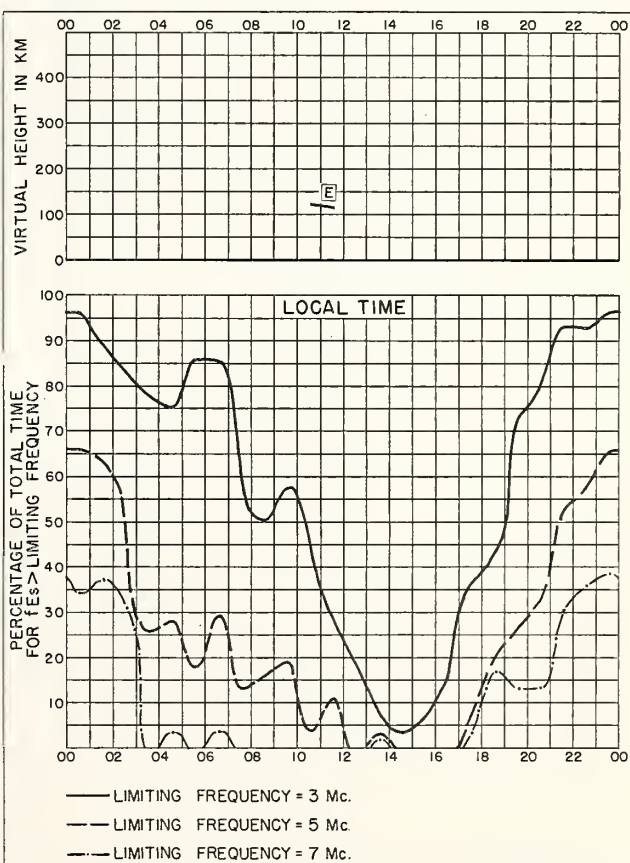
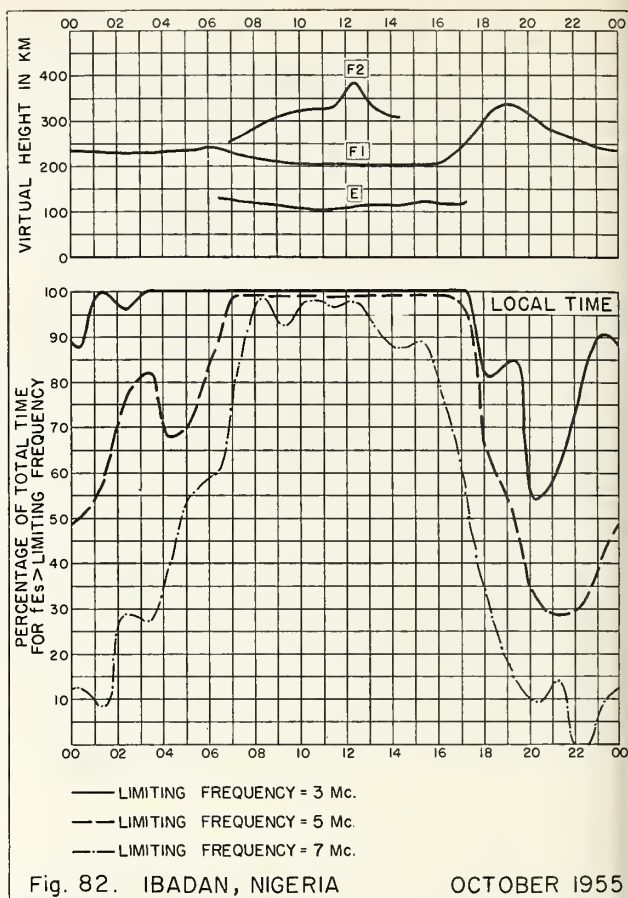
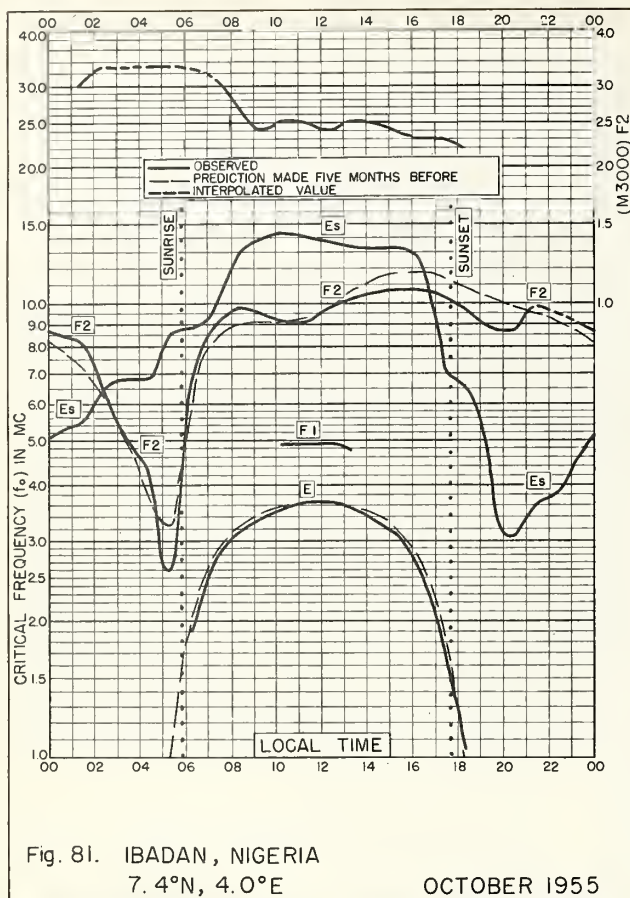
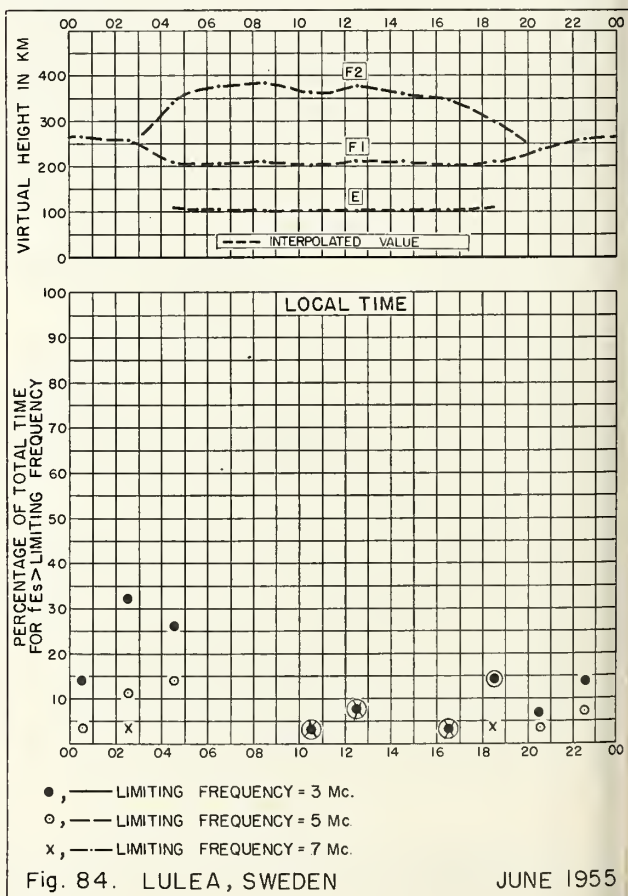
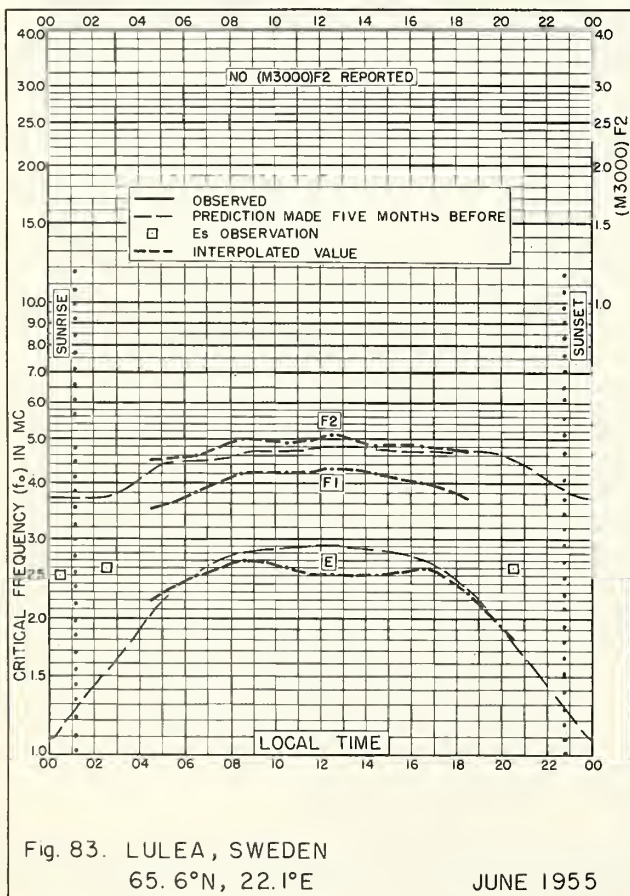


Fig. 80. POINT BARROW, ALASKA OCTOBER 1955

NBS 490



NBS 490



NBS 490

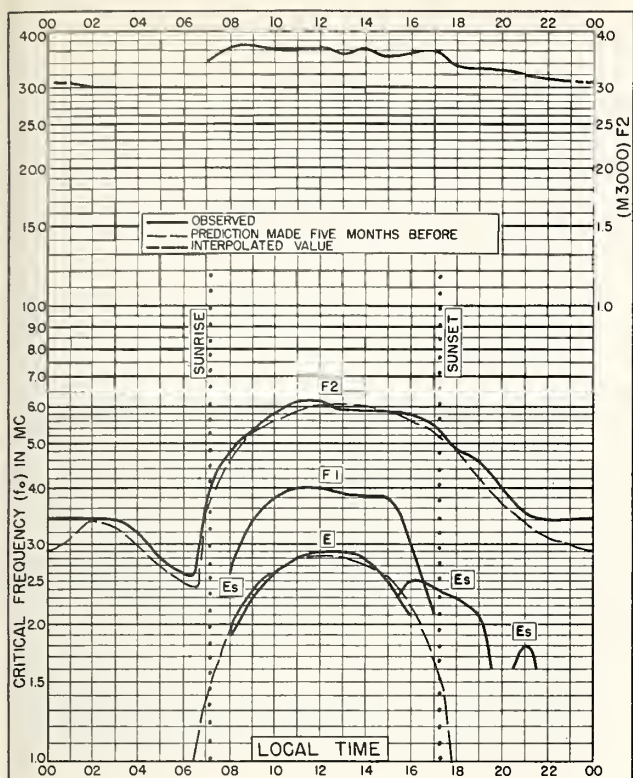


Fig. 85. POITIERS, FRANCE

46.6°N, 0.3°E

FEBRUARY 1955

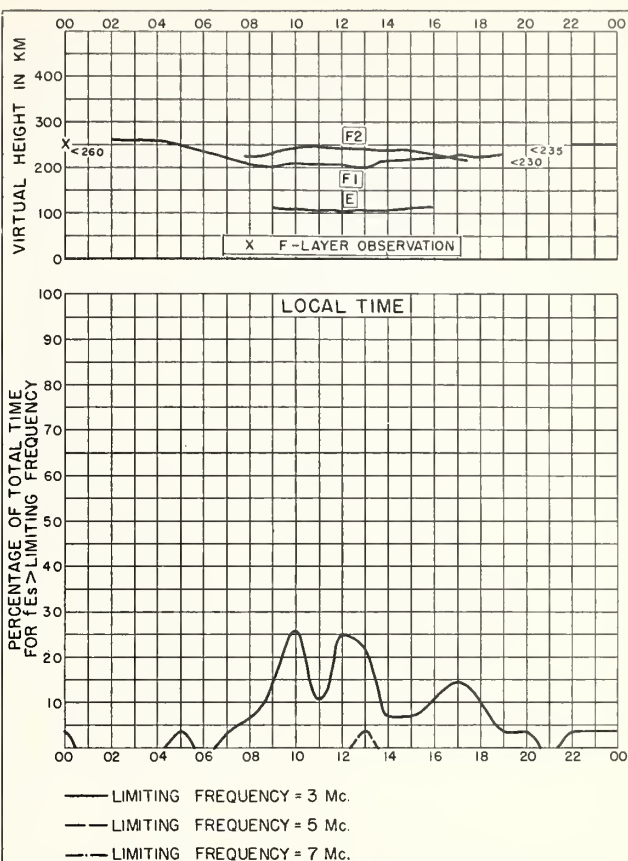


Fig. 86. POITIERS, FRANCE

FEBRUARY 1955

NBS 490

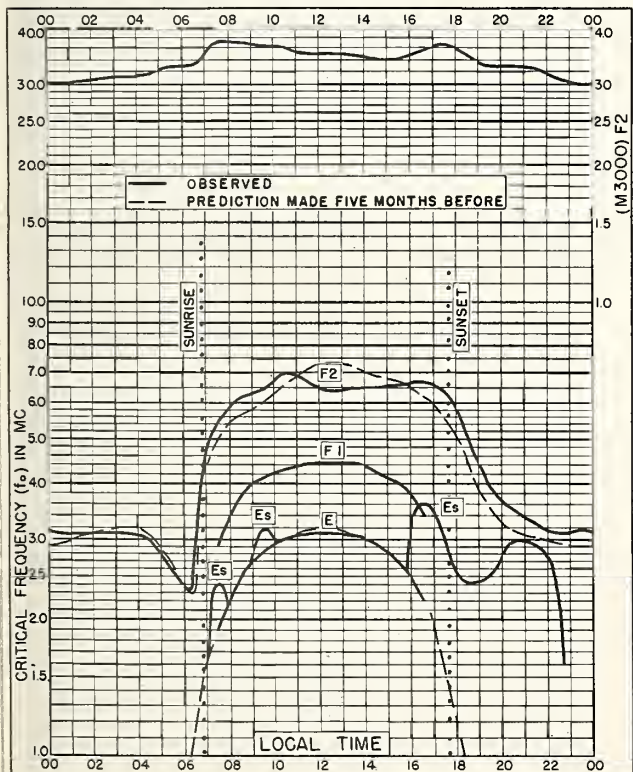


Fig. 87. CASABLANCA, MOROCCO

33.6°N, 7.6°W

FEBRUARY 1955

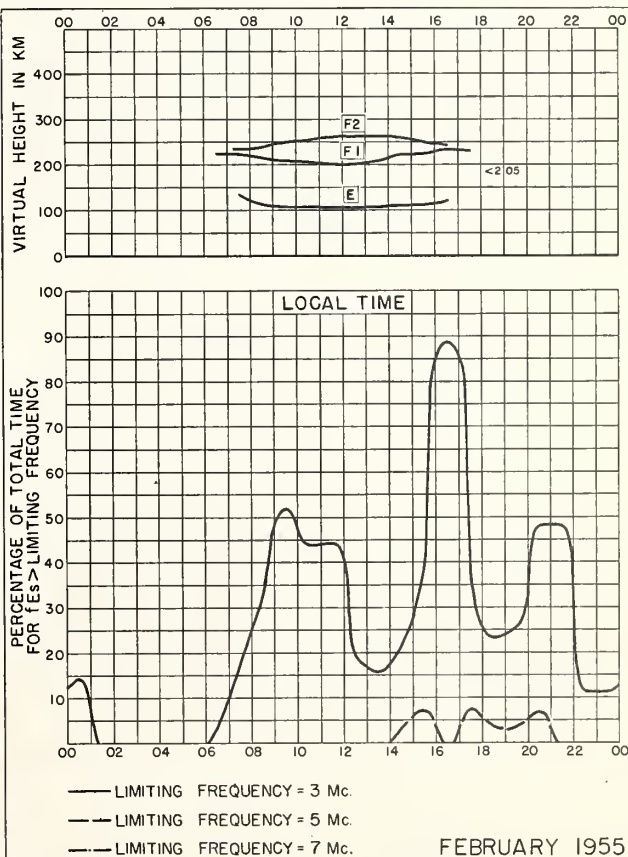


Fig. 88. CASABLANCA, MOROCCO

FEBRUARY 1955

NBS 490

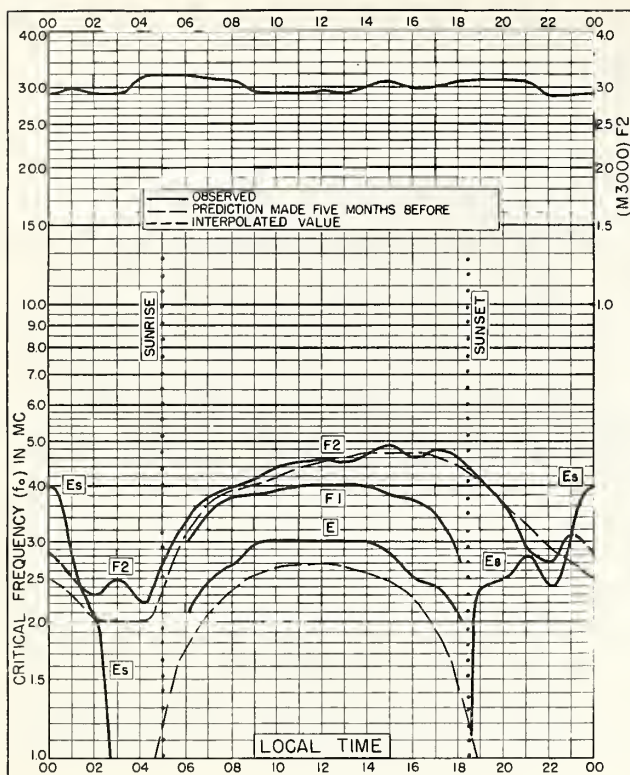


Fig. 89. MACQUARIE I.

54.5°S, 159.0°E

OCTOBER 1954

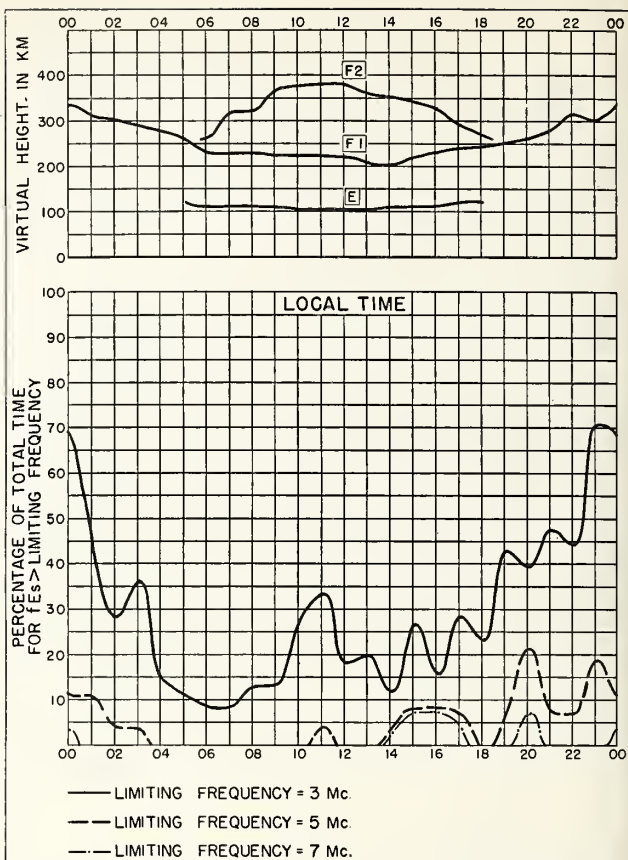


Fig. 90. MACQUARIE I.

OCTOBER 1954

NBS 490

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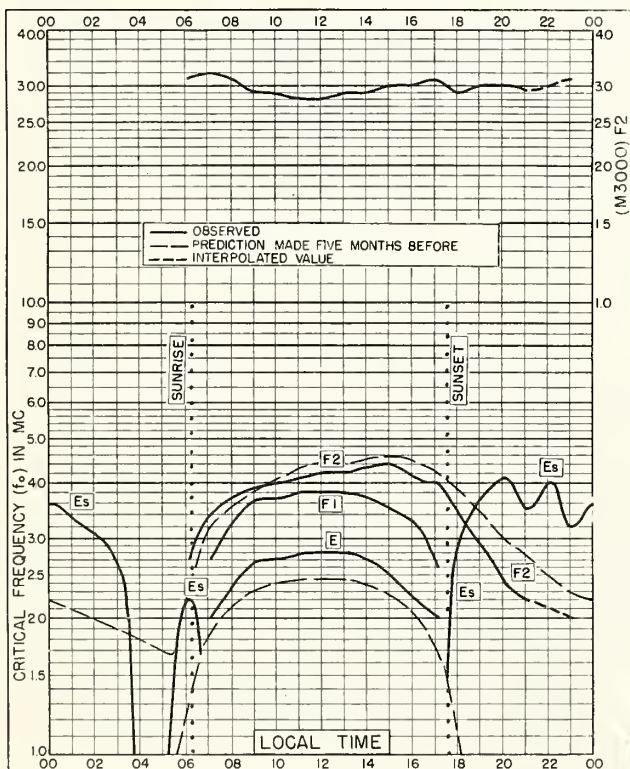


Fig. 91. MACQUARIE I.

54.5°S, 159.0°E

SEPTEMBER 1954

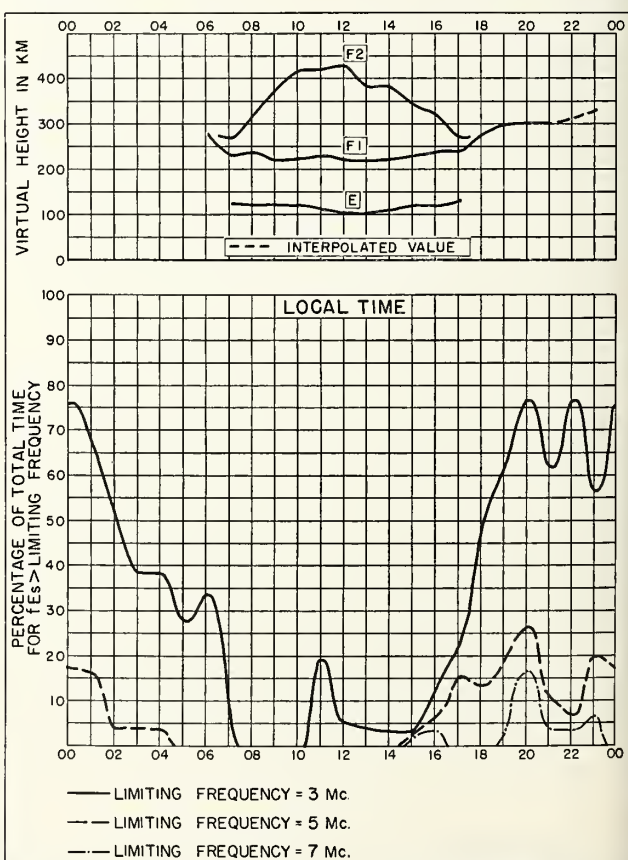


Fig. 92. MACQUARIE I.

SEPTEMBER 1954

NBS 490

U. S. GOVERNMENT PRINTING OFFICE 13-5227

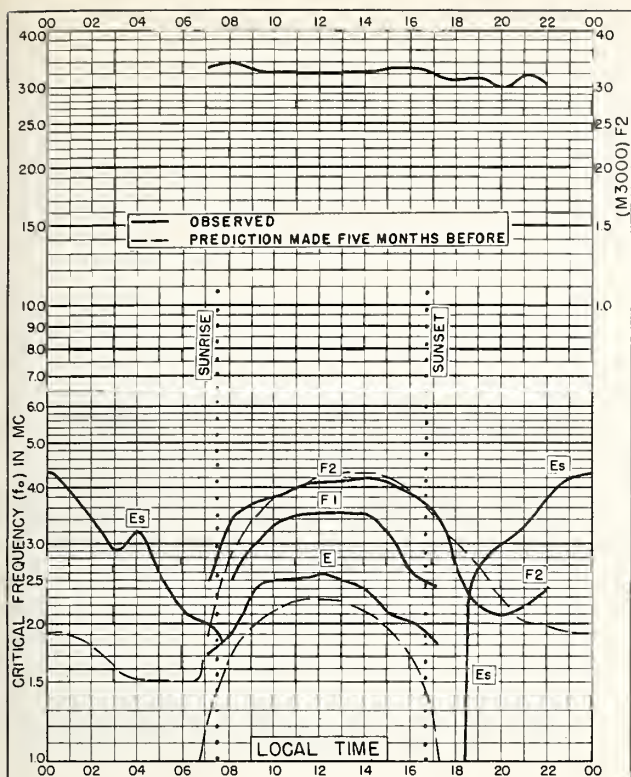


Fig. 93. MACQUARIE I.
54.5°S, 159.0°E

AUGUST 1954

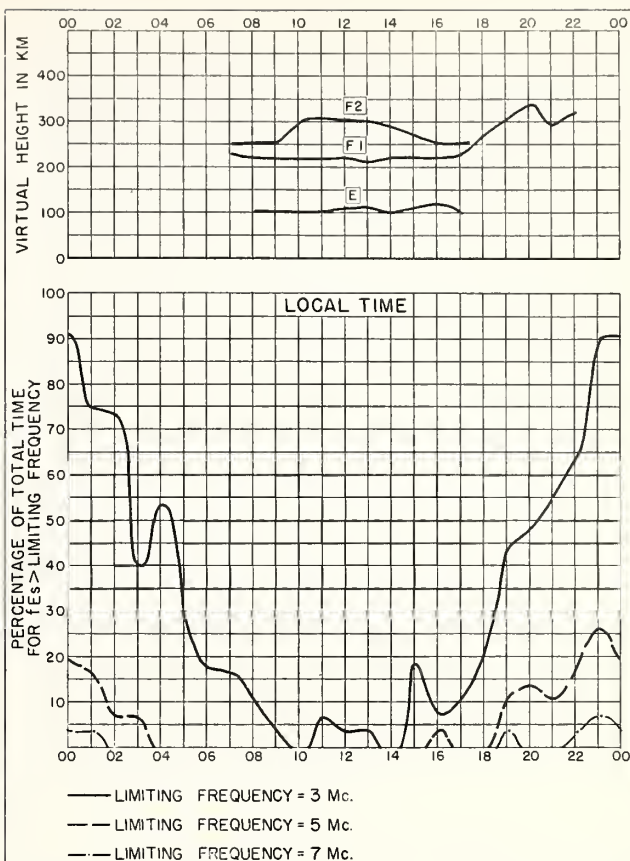


Fig. 94. MACQUARIE I.

AUGUST 1954

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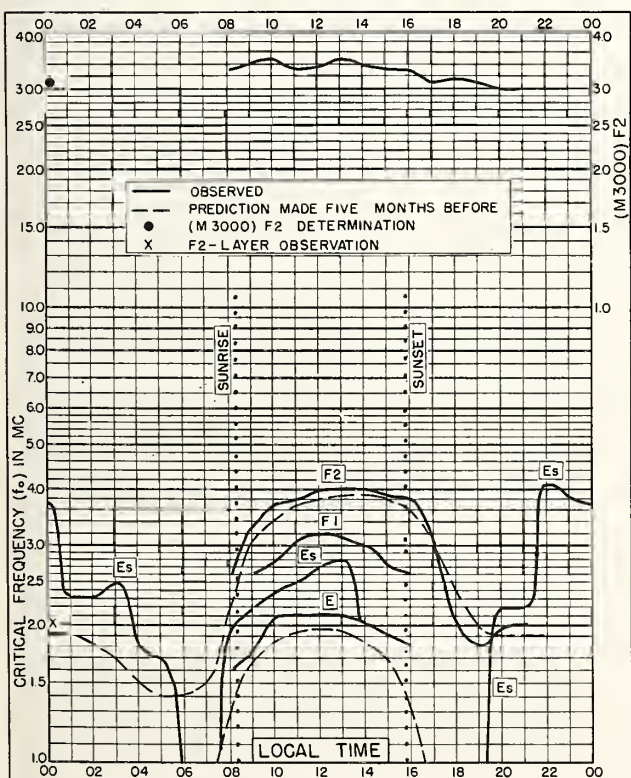


Fig. 95. MACQUARIE I.
54.5°S, 159.0°E

JULY 1954

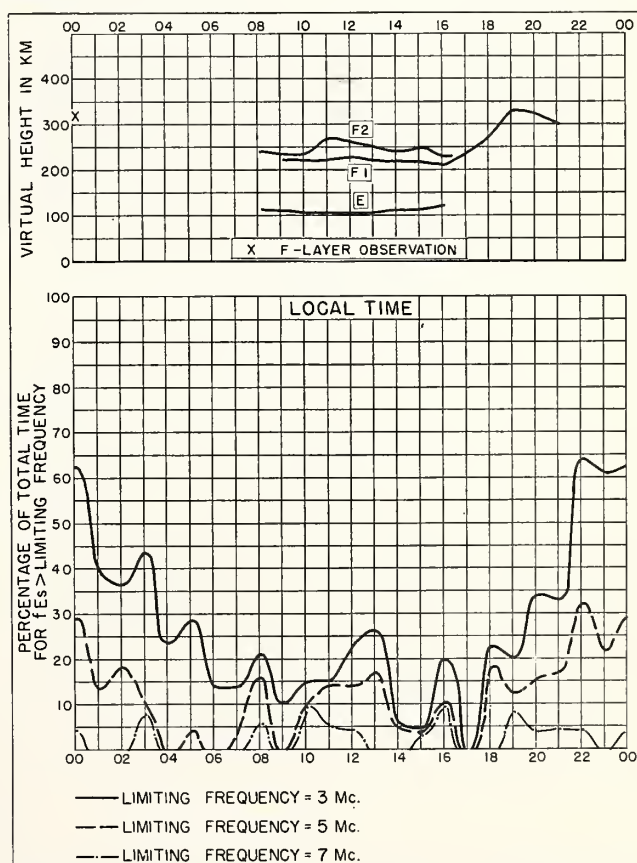


Fig. 96. MACQUARIE I.

JULY 1954

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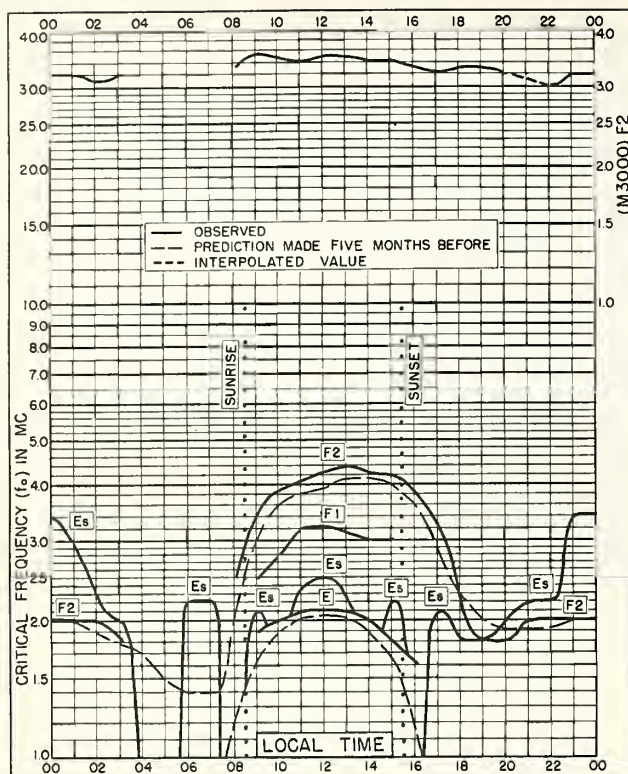


Fig. 97. MACQUARIE I.
54.5°S, 159.0°E

JUNE 1954

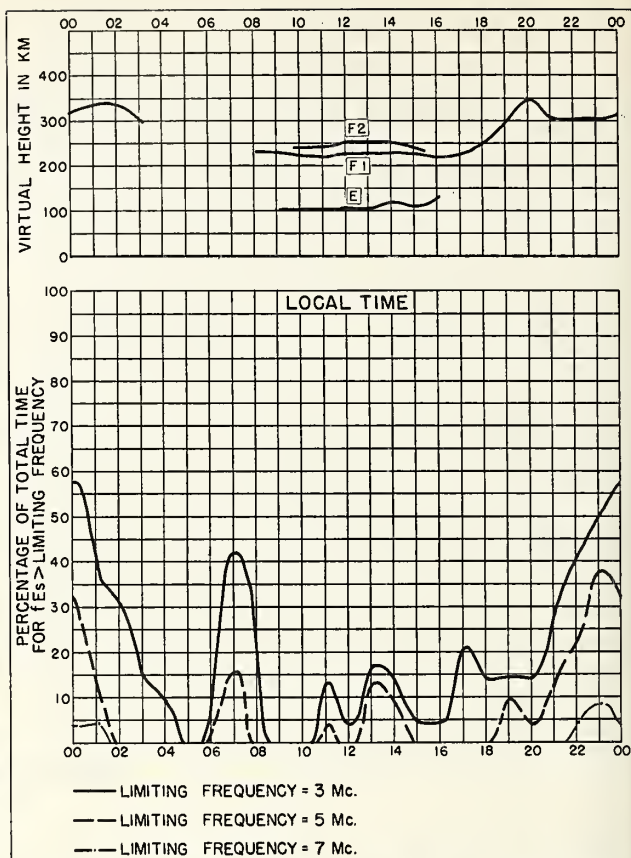


Fig. 98. MACQUARIE I.

JUNE 1954

NBS 490

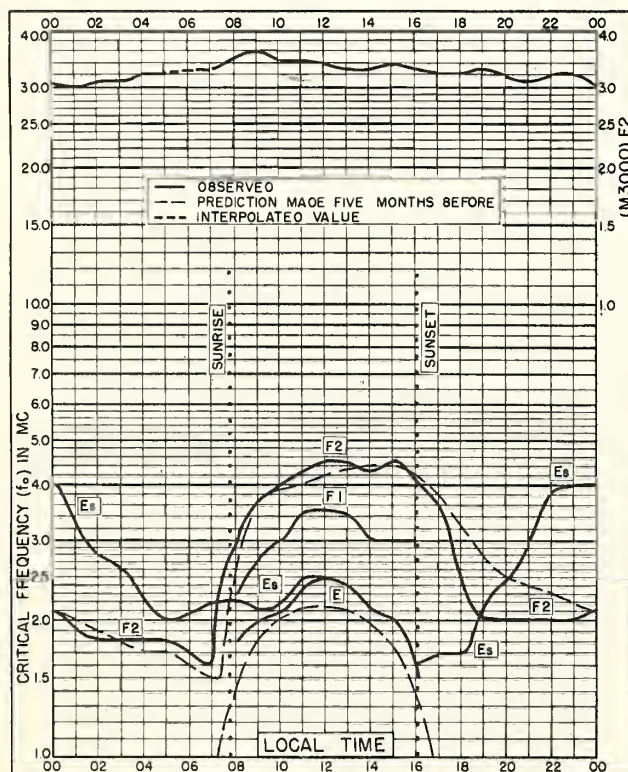


Fig. 99. MACQUARIE I.
54.5°S, 159.0°E

MAY 1954

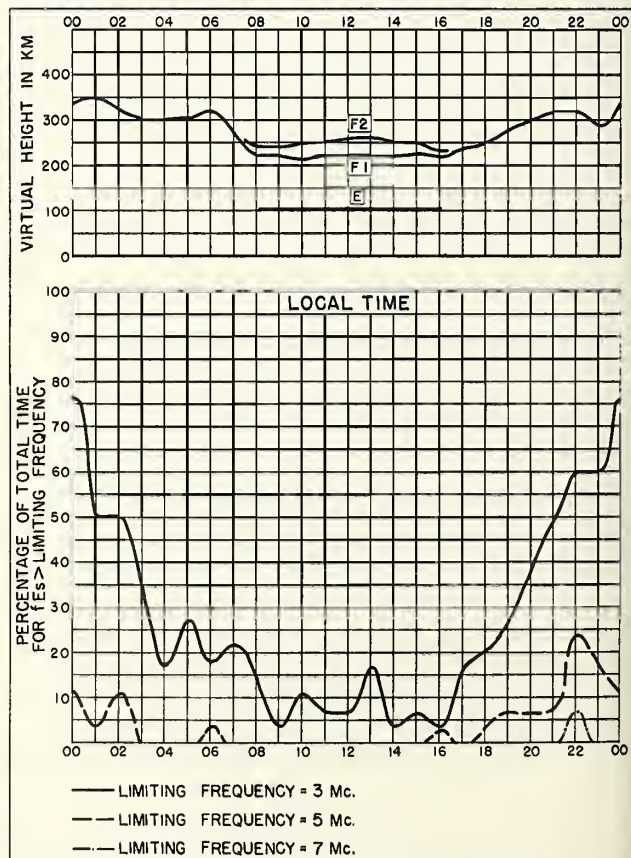
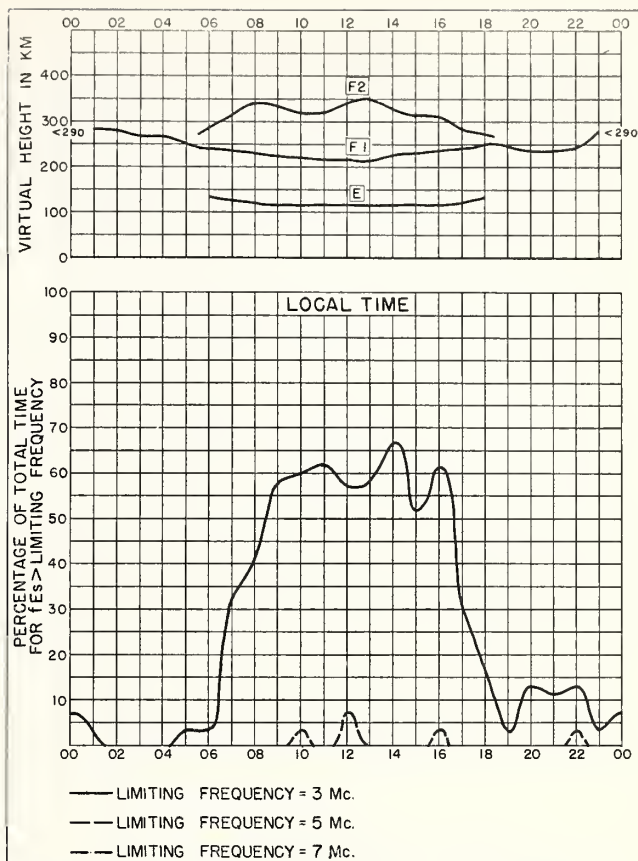
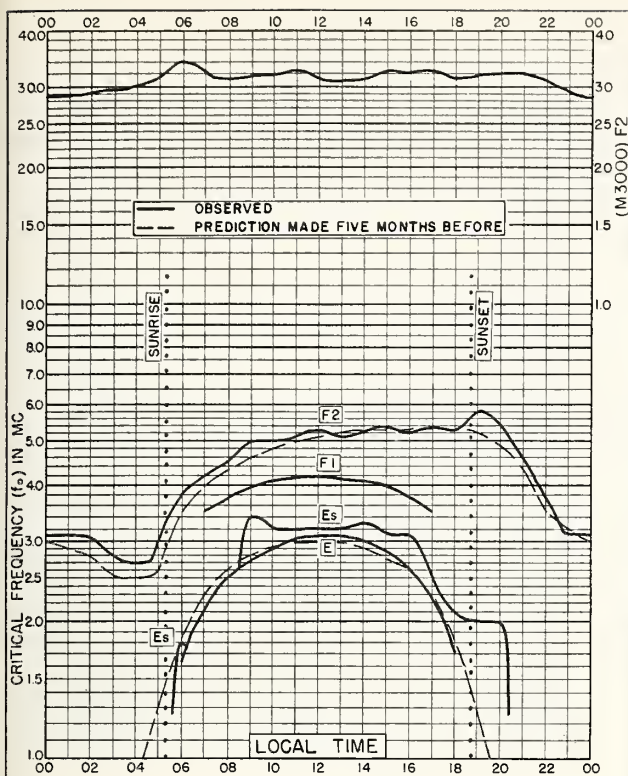


Fig. 100. MACQUARIE I.

MAY 1954

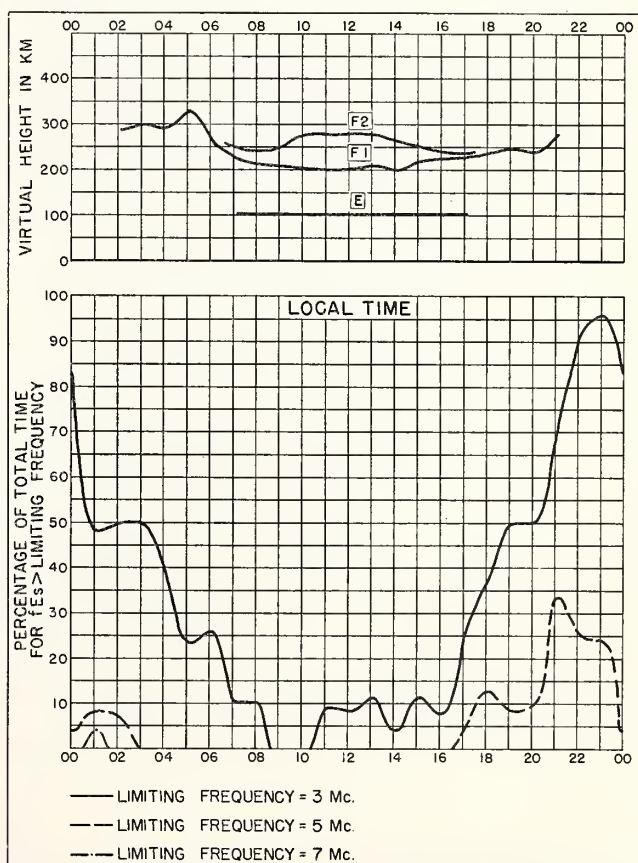
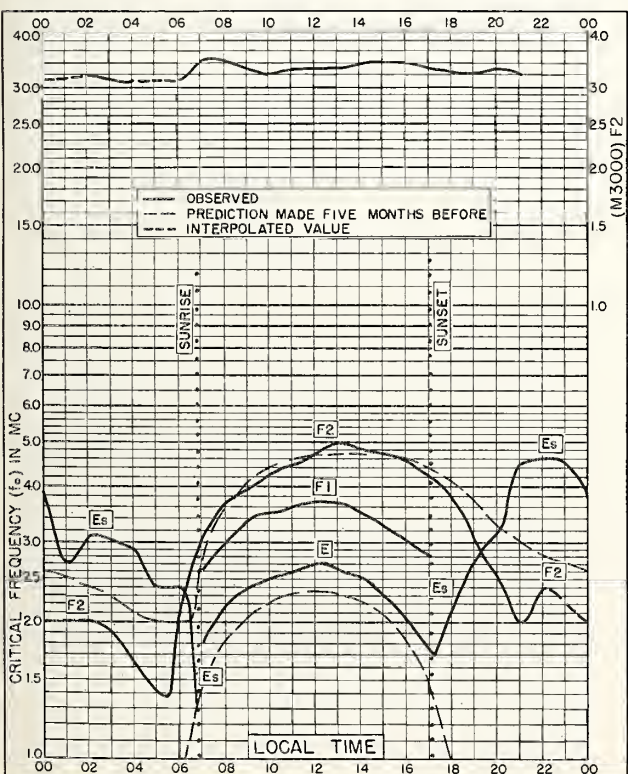
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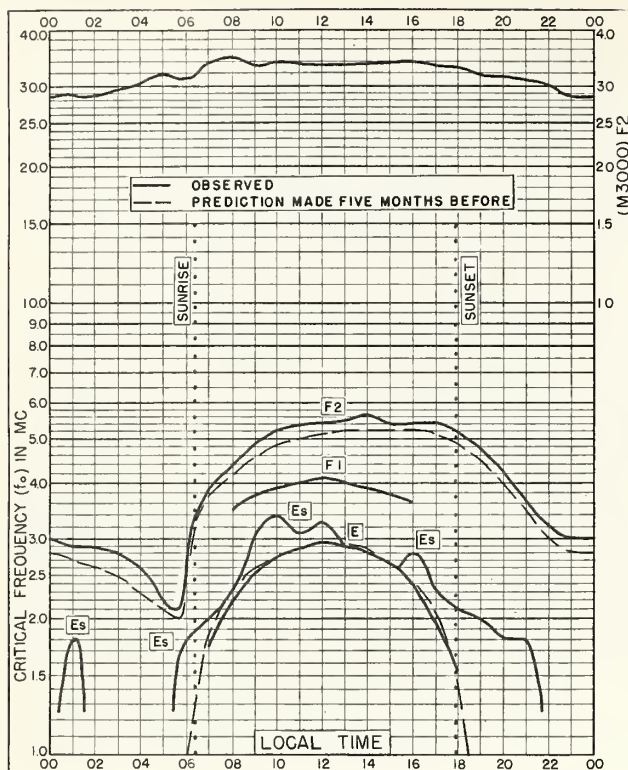


Fig. 105. FRIBOURG, GERMANY
48.1°N, 7.8°E

MARCH 1954

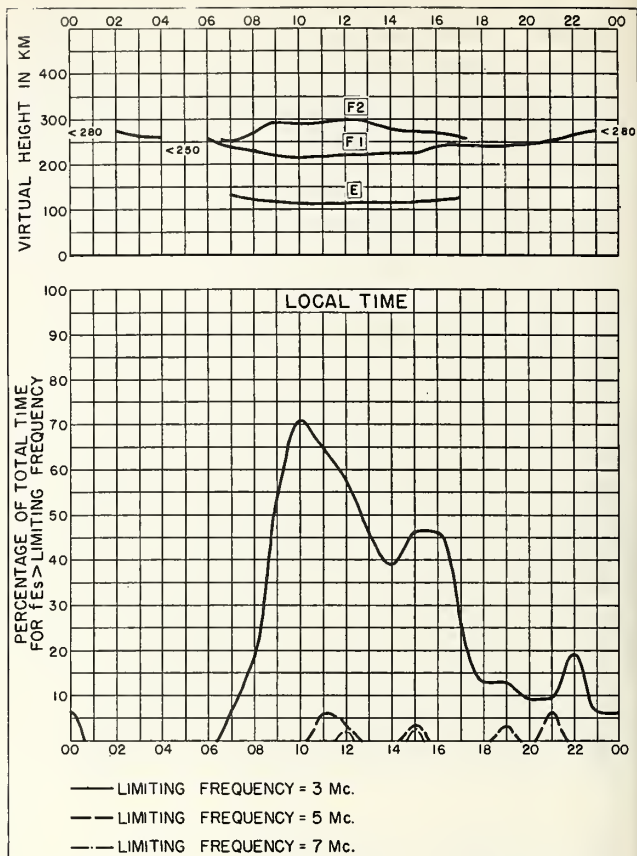


Fig. 106. FRIBOURG, GERMANY

MARCH 1954

NBS 490

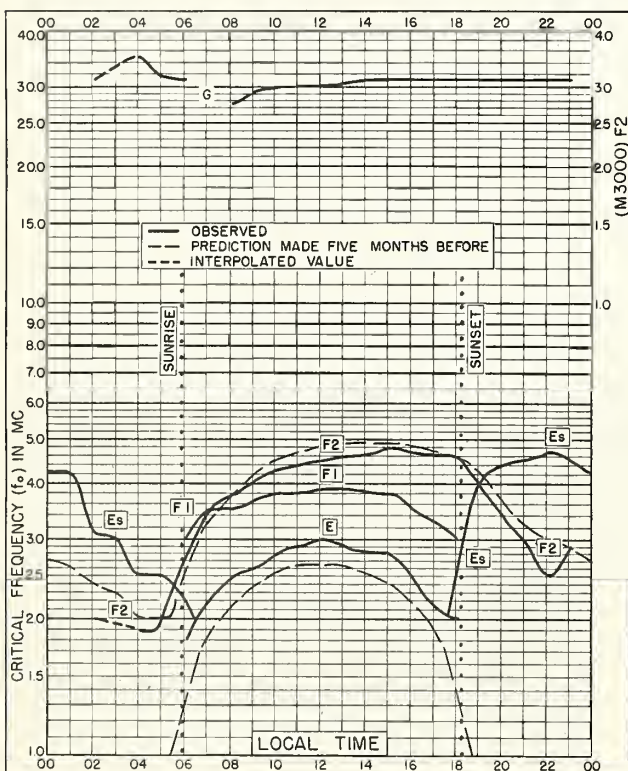


Fig. 107. MACQUARIE I.
54.5°S, 159.0°E

MARCH 1954

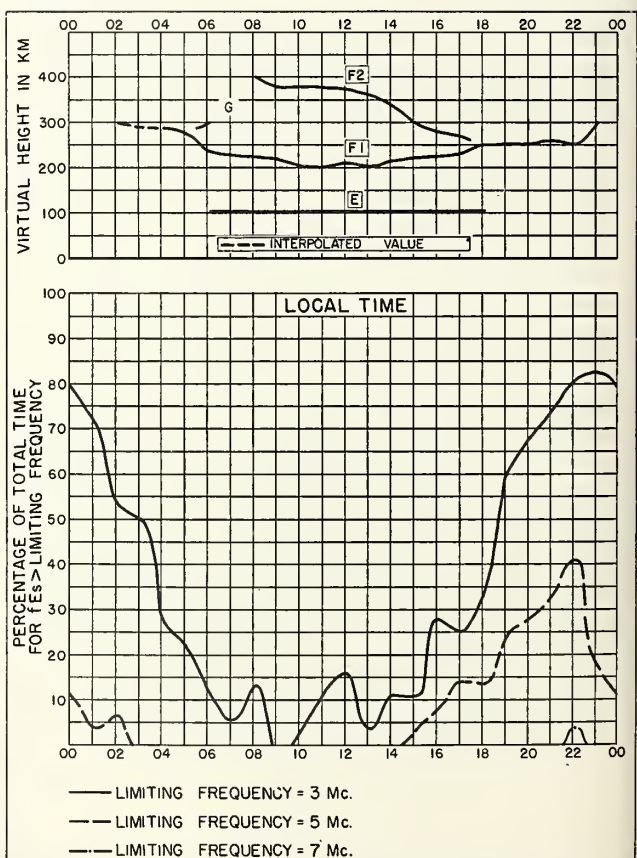


Fig. 108. MACQUARIE I.

MARCH 1954

NBS 490

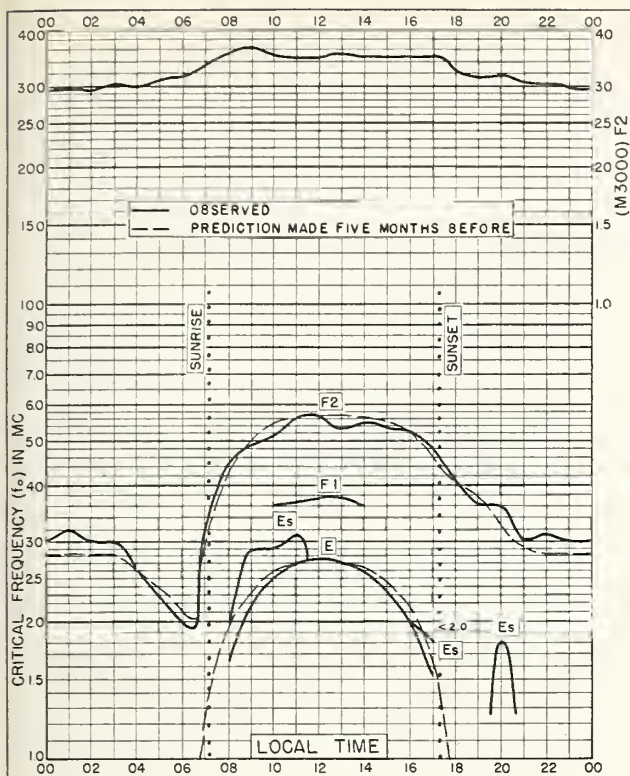
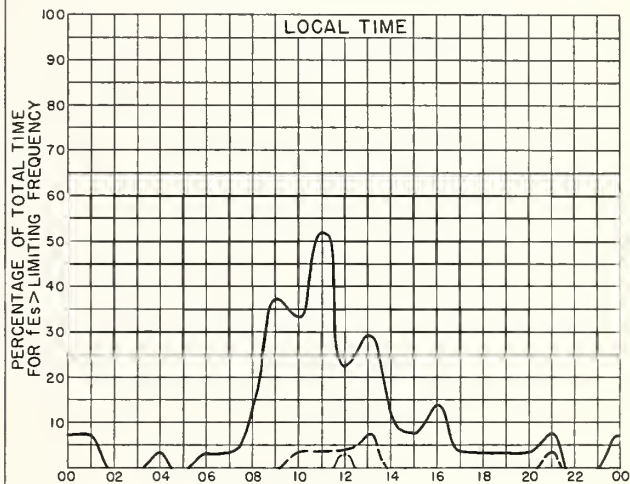
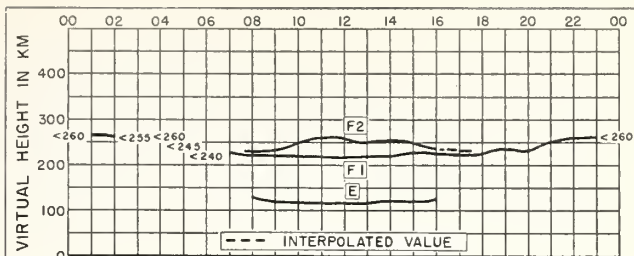


Fig. 109. FRIBOURG, GERMANY
48.1°N, 7.8°E FEBRUARY 1954



— LIMITING FREQUENCY = 3 Mc.
- - - LIMITING FREQUENCY = 5 Mc.
- · - · - LIMITING FREQUENCY = 7 Mc.

Fig. 110. FRIBOURG, GERMANY FEBRUARY 1954

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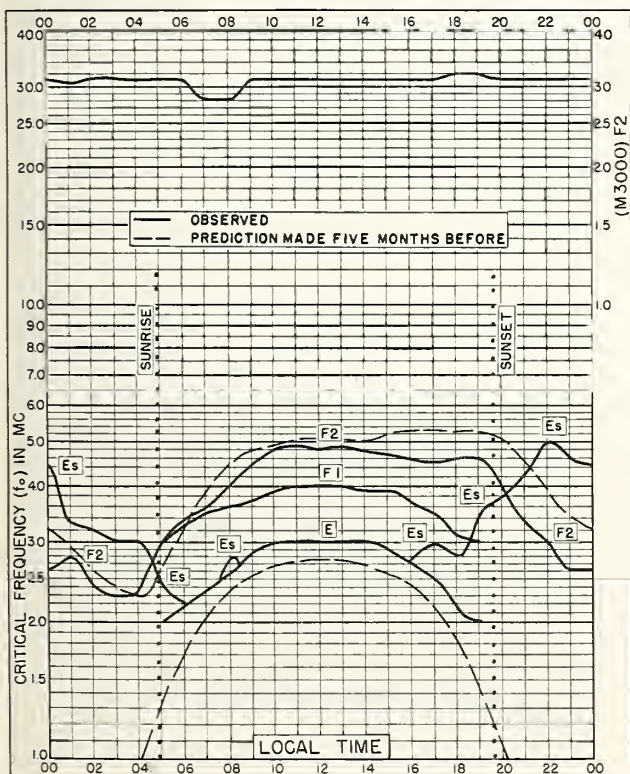
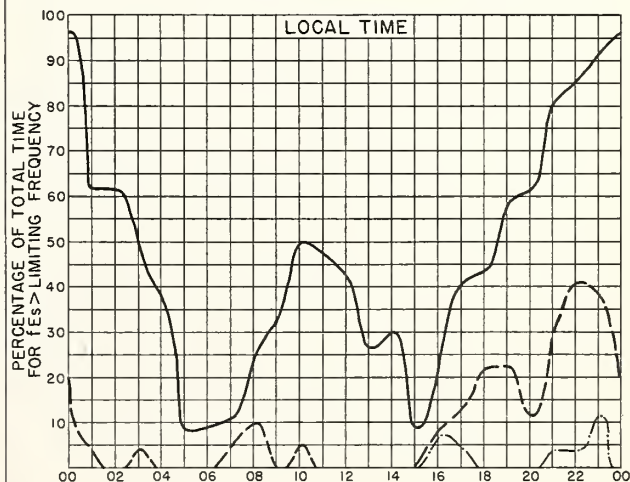
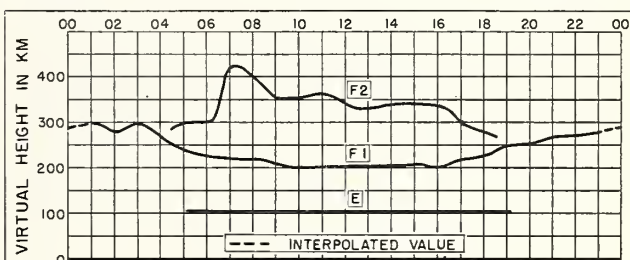


Fig. 111. MACQUARIE I.
54.5°S, 159.0°E FEBRUARY 1954

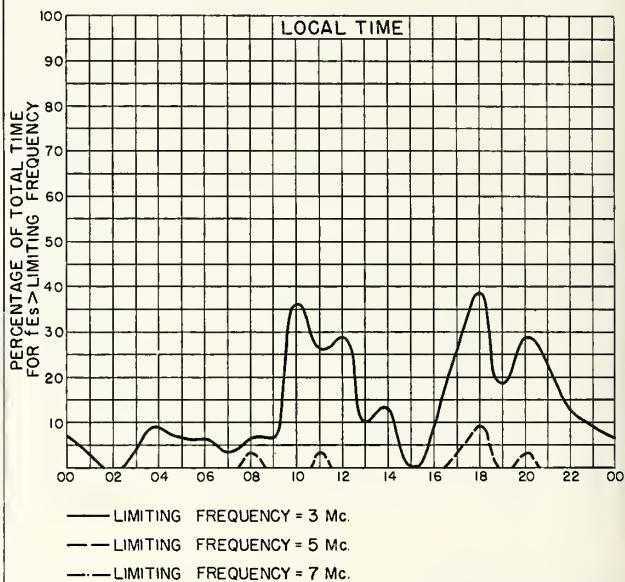
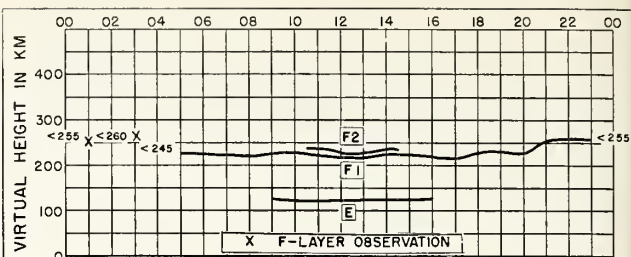
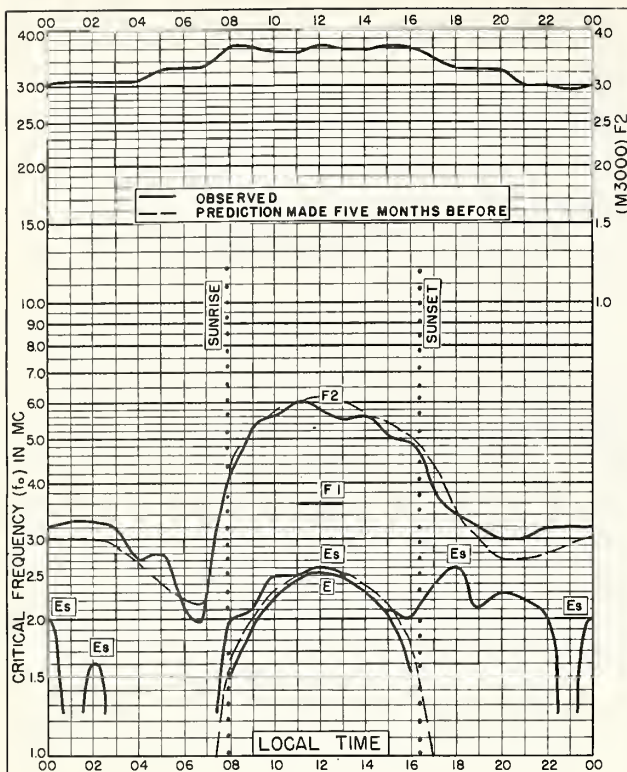


— LIMITING FREQUENCY = 3 Mc.
- - - LIMITING FREQUENCY = 5 Mc.
- · - · - LIMITING FREQUENCY = 7 Mc.

Fig. 112. MACQUARIE I. FEBRUARY 1954

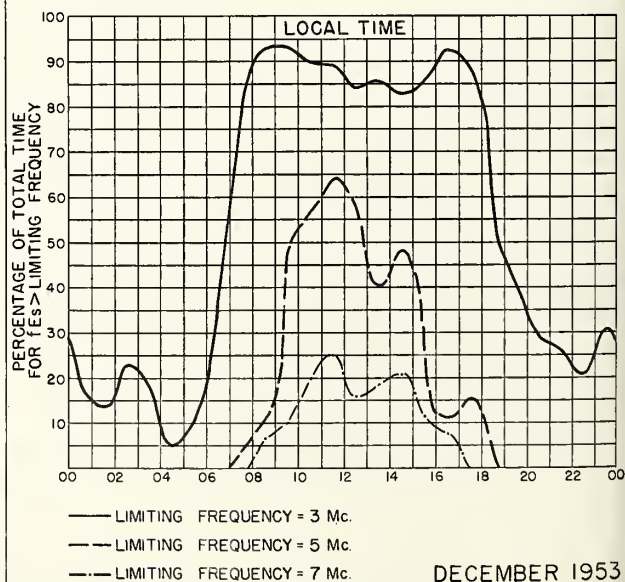
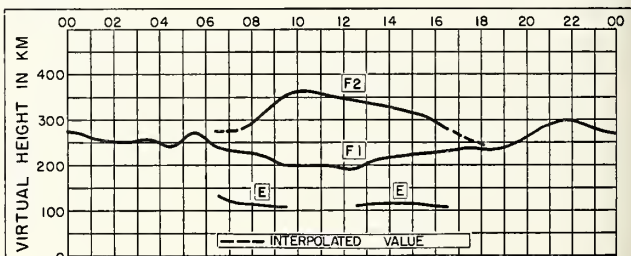
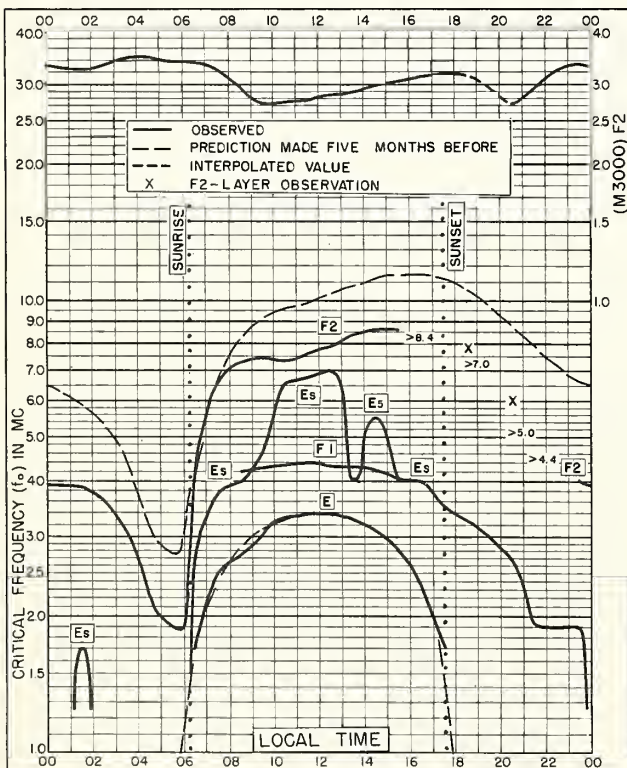
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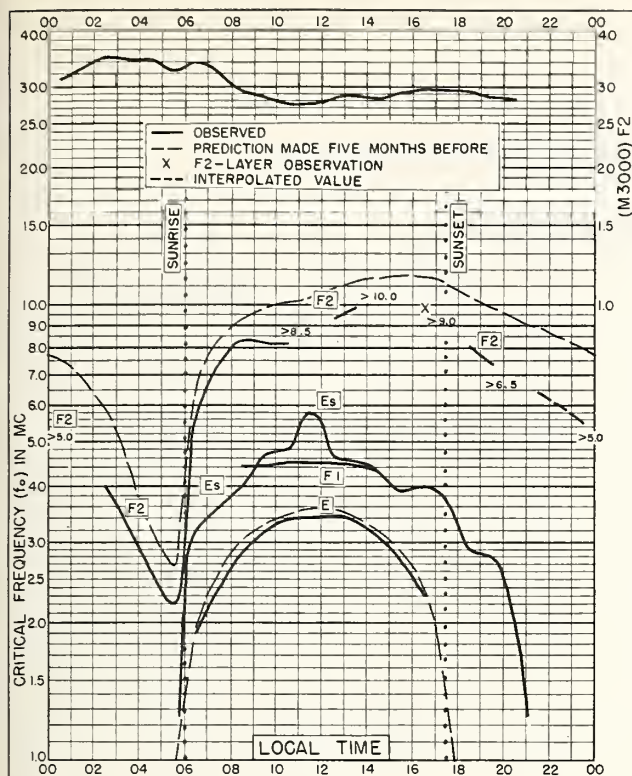


Fig. 117. DJIBOUTI, FRENCH SOMALILAND
11.5°N, 43.1°E NOVEMBER 1953

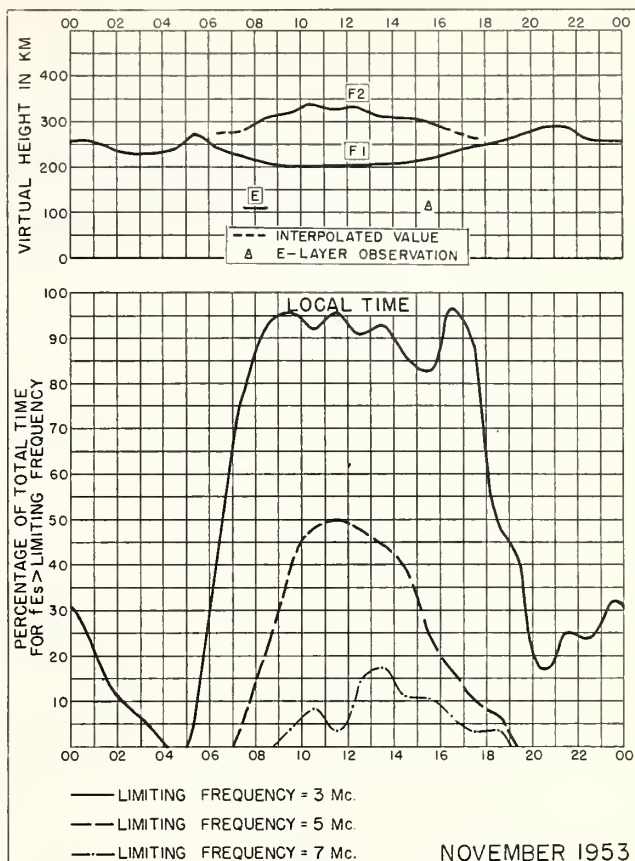


Fig. 118. DJIBOUTI, FRENCH SOMALILAND

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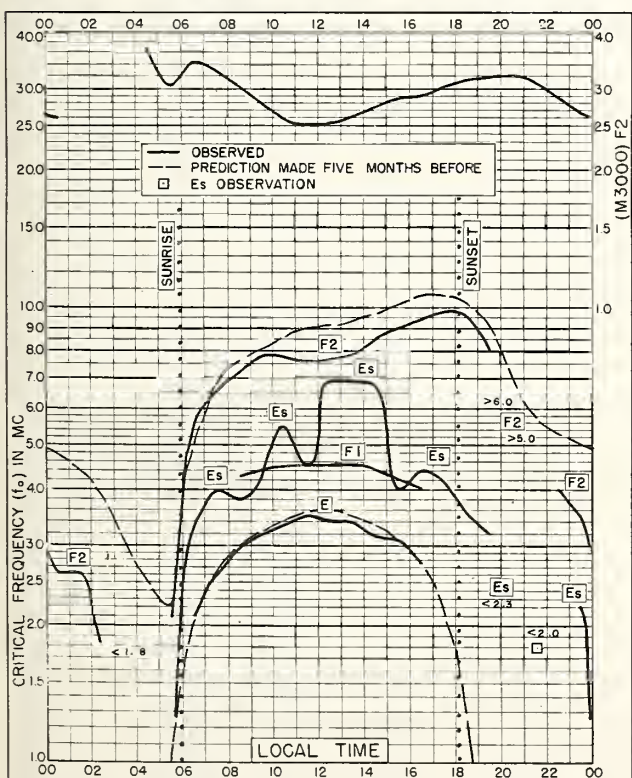


Fig. 119. DJIBOUTI, FRENCH SOMALILAND
11.5°N, 43.1°E AUGUST 1953

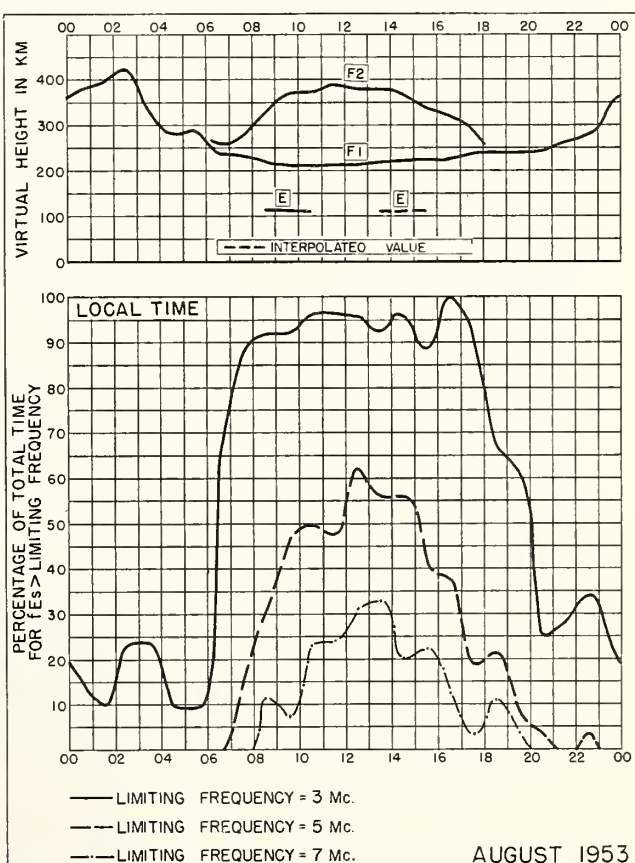


Fig. 120. DJIBOUTI, FRENCH SOMALILAND

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